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Pilot Demonstration of Sodium Carbonate Conditioning

Acurex Corp, Research Triangle Park, NC

Prepared for

Industrial Environmental Research Lab, Research Triangle Park, NC

Apr 79

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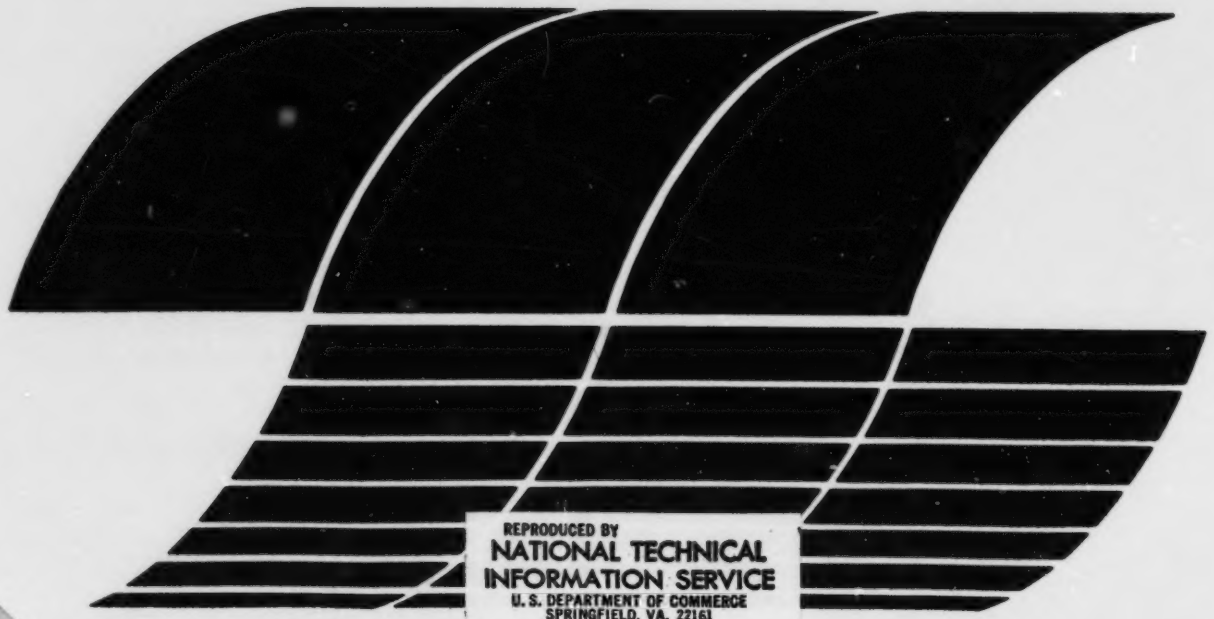
Interagency Energy/Environment R&D Program Report



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April 1979

Pilot Demonstration of Sodium Carbonate Conditioning

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Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Research and Development
Washington, DC 20460

ABSTRACT

This report describes a performance evaluation, conducted with a pilot precipitator, studying the effects of injecting anhydrous sodium carbonate to the exhaust of a utility boiler burning Western coal.

In situ resistivity measurements, precipitator operating conditions, particulate concentration and size distribution measurements, and analyses of flyash composition constitute the data assembled from this demonstration. The following results reflect the effects of conditioning the base flyash with a 1-2% concentration as sodium oxide:

1. a sixfold reduction in resistivity (i.e., from 2.1×10^{12} to 3.7×10^{11} OHM-CM);

2. a threefold improvement in average current density, (i.e., from 6 to 18 nA/cm^2);

3. a threefold reduction in emission rate, significant enough to move performance from non-compliance (52.4 nanograms/joule) to compliance (15.5 nanograms/joule); and

4. an enhancement in the fractional efficiency characteristics, particularly in the fine particle range.

The characteristics of sodium carbonate conditioning are discussed, including the injection considerations, material specifications, and the distinctive rationale for resistivity reduction.

This report was submitted in partial fulfillment of Contract No. 68-02-2646 by Acurex Corporation under the sponsorship of the U.S. Environmental Protection Agency.

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SECTION 1

INTRODUCTION

The program objective was to determine the effects on precipitator operation and collection performance of adding sodium carbonate into the exhaust of a boiler burning low sulfur, low sodium Western coal. The specific effects of interest were:

1. particulate resistivity level
2. precipitator operating conditions
3. particulate removal characteristics

The feasibility of utilizing conditioning agents at the test site (Montana Power Station, Colstrip, Mont.) is documented by another power facility (Montana Power/Corrette Station, Billings, Mont.) using coal from the same strip mine. Injection of proprietary conditioning material into the flue gas before it entered the precipitator dramatically affected operating corona points and improved particulate collection performance so that compliance limits were met.[1] In situ resistivity measurements at 135°C at the test site determined the flyash resistivity to be in the lower 10^{12} OHM-CM range, outside the preferred range of 10^{8} to 10^{10} OHM-CM. Compositional analyses of the coal and flyash provide the basis of this excessive resistivity, i.e., low sulfur (1.01 percent) and low sodium (0.31 percent) content.

The experimental conditioning agent was anhydrous sodium carbonate (Na_2CO_3), a dry, powdery material with size distribution comparable to flyash (mean size ≐ 15μ). Charging was achieved by metering the material with a calibrated screwfeeder and entraining it with a compressed air supply through an injector. Identical test methodology employing a pilot-scale precipitator was implemented for a two phase program:

1. Operation with sodium carbonate addition at a 4 - 5 percent rate relative to flyash concentration.

2. Operation without conditioning additives.

The pilot scale electrostatic precipitator (ESP) is one of three mobile field units owned by the Particulate Technology Branch, Utilities and Industrial Power Division, Industrial Environmental Research Laboratory, U. S. Environmental Protection Agency (UIPD/IERL/EPA), Research Triangle Park, North Carolina. A pilot scale scrubber and baghouse complement a fleet of conventional collection systems designed to offer:

- Comparative evaluation of removal and economic performance factors among the three conventional control systems on either traditional sources or process streams, or inadequately documented particulate-laden process streams.

- A parametric evaluation characterizing a given control device/emissions source in search of optimum design criteria.

- Feasibility/demonstration programs on novel or modified processes.

- Specific problem-solving programs in control technology.

SECTION 2

SUMMARY AND CONCLUSIONS

The objective of this pilot program was to determine the conditioning effects of adding anhydrous sodium carbonate into a "cold-side" slipstream with respect to the collection performance of an ESP. A power plant combusting low sulfur, low sodium Western coal generated the high resistivity ash (2.5×10^{12} OHM-CM 132°C) for conditioning evaluation.

A performance evaluation was conducted on a pilot scale precipitator which treated the base and sodium-conditioned flyash. The program, conducted over several weeks, consisted of twenty days of operating and testing. For each ash species, the pilot precipitator treated 28.3 m^3/min (1,000 acfm) of flue gas at an average of 110°C, maintaining a specific collection area equal to 57 m^2/m^3/sec. (290 ft^2/Kcfm).

In situ resistivity measurements, precipitator operating conditions, and particulate concentration and particle size distribution measurements constitute the data assembled for the comparative demonstration.

The following results reflect the effects of conditioning the base ash with a 1.0-1.5% concentration of sodium carbonate as sodium oxide (Na_2O):

1. A sixfold reduction in specific resistivity, suppressing the base ash from 2.1×10^{12} OHM-CM to 3.7×10^{11} OHM-CM.

2. Relative improvements in achievable current densities ranging from a factor of two to six. Under

steady state conditions, maximum current densities were 1-8 nA/cm^2 for the base ash, and 10-24 nA/cm^2 for the conditioned ash.

3. Enhancement of particulate collection levels, resulting in an improvement in collection efficiency from 98.19 to 99.46 percent, associated with a reduction in outlet loading from 140 to 40 mg/DSm^3.

4. Improvement in fractional efficiency characteristics, particularly in the fine particle range, as demonstrated by the following results:

	FRACTIONAL EFFICIENCY @			
	0.3 μm	0.5 μm	1.0 μm	3.0 μm
Base Ash	69.4	81.2	93.9	98.9
Conditioned Ash	91.8	93.7	97.4	99.7

5. On this pilot scale basis the difference in collection efficiency between the base ash and the sodium-conditioned ash was significant enough to move performance from noncompliance (52.4 nanograms/joule [ng/J]) to compliance (15.5 ng/J).

Assimilation of the test results prompts the following conclusions:

1. Conditioning by the admixture of conductive material to reduce specific resistivity of the process effluent, in quantities small enough to be potentially economical, has been demonstrated.

2. A material for such conditioning, which has the potential to be economical, commercially available, and environmentally acceptable, has been identified.

3. This material can be utilized for flyash treatment without special equipment or extensive maintenance requirements by simply injecting it into a process stream. That is, the material handling equipment is the same as used at other points in a power plant.

4. The effects of using sodium carbonate as a conditioning agent coincide with alternative methods:

    a. An increase in the operating corona points for each precipitator field.

b. An increase in collection performance, primarily in the fine particle size range.

Note:

Federal new source performance standards (NSPS) for coal-fired steam electric plants of 73 MW (250 million Btu/hr) or greater heat input for particulate matter = 43 ng/J, 2-hour average.

SECTION 3

DESCRIPTION OF FACILITIES AND INSTALLATION

POWER PLANT

The test program was conducted at the Montana Power Company Station at Colstrip, Montana. The recently constructed facility represents current design and operating methodology for coal-fired electric-power-generating stations. Modular venturi scrubbers provide emission control for two 350 megawatt (MW) boilers. More pertinent information is available via a performance evaluation program conducted by Southern Research Institute.[2]

Design operating data from the test facility are listed in Table 1, along with power production data for several days during the test program. Table 2 presents coal and flyash analyses, as well as gas composition data.

PILOT ESP FACILITY

General Description

The mobile ESP facility consists of two separate units mounted on freight trailers 12.2 meters in length. Figure 1 is a floor plan of the two units. The first unit is the process trailer which houses a five-section ESP and all auxiliary equipment. This equipment consists of:

- Heat-traced, insulated 25.4 cm duct.
- Flow rectification equipment containing vaned turning elbows and diffuser sections.

Table 1. COLSTRIP POWER PLANT DESIGN AND OPERATING DATA

Unit 11 Operating Data as Designed	358	330	282	212
1) Coal Feed Rate, metric tons/hr (appr.)	200	170	150	110
2) Steam Production, kg/hr (design)	1,117,579	1,010,561	848,871	636,654
3) Output Steam Pressure, kg/cm^2 (design)	177	169	169	169
4) Output Steam Temperature, °C (design)	540	540	540	540
5) Generation Rate, MW	358	330	282	212
6) Gas Volume, Kcm(min)	34.2	31.5	27.0	20.3
7) Temperature at Cold-side Air Preheater, °C	120 to 150°C	(145°C Normal)		

Table 2. COAL, FLYASH AND FLUE GAS CHARACTERISTICS

Coal Analyses

25.5%	H_2O	37.2%	Moisture-Free Volatile Matter	68.13%	Carbon
27.7	Volatile Matter	51.46	Fixed Carbon	4.51	H_2
38.3	Fixed Carbon	11.3	Ash	14.0	O_2
8.45	Ash	11,745	Btu/lb.	1.0	N_2
8750	Btu/lb.			1.01	S
				11.34	Ash

Flyash Composition

Na_2O	K_2O	MgO	CaO	Fe_2O_3	Al_2O_3	SiO_2	TiO_2	P_2O_5	SO_3	L.O.I.
0.31	0.13	4.95	21.9	5.44	22.4	41.6	0.97	0.41	0	2.05

Gas Composition

CO_2	13.2-13.5%
O_2	5.5- 5.6
H_2O	8.0- 8.4
SO_2	350 - 450 ppm (Controlled Condensation Method)*
SO_3	0 (Controlled Condensation Method)*

*Improved Chemical Methods for Sampling and Analyses of Gaseous Pollutants from the Combustion of Fossil Fuels. Volume I, Sulfur Dioxide Measurements, June, 1971 (APTD-1106, PB-209 267).

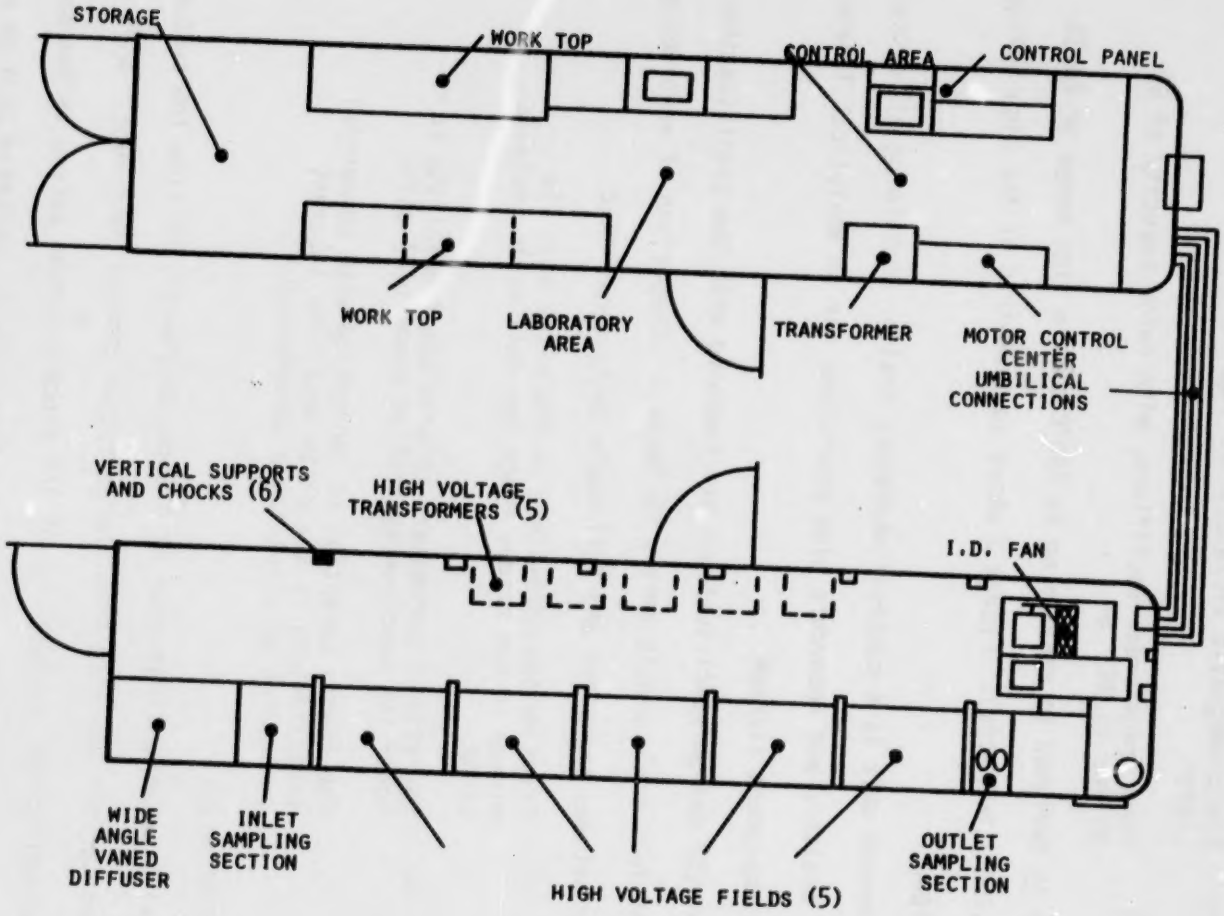


Figure 1. Plan view of mobile ESP facility.

- A screw conveyor and gate valve for the removal of the collected material.
- Electromagnetic vibrators for rapping the collection plates.
- Five transformer-rectifiers, with rated capacity of 50 KV and 10 MA. DC.

The system is designed to operate up to 540°C over a flow range of 28-35 m^3/min (1,000-3,000 acfm). Figure 2 shows an isometric of the high voltage field design.

The second unit is a control/laboratory trailer containing all process controls, monitors and recorders plus provisions for an analytical laboratory and spare equipment storage.

Pilot ESP design specifications are compared with the specifications typical of full scale precipitators in Table 3. Comparison of each design parameter between the pilot and full scale units shows that:

a. Fixed design parameters on the pilot unit lie midway in the normal range for full scale installations.

b. Operational parameters contain the flexibility to cover the spectrum typical of commercial units.

c. The single exception to conformity with commercial installations is the plate area, the inherent concession of pilot-scale methodology.

SITE INSTALLATION

A slipstream was withdrawn at a location downstream from the combustion-air preheater and upstream from the pollution control equipment. A 25.4 cm pipe located across the midpoint of the process stream served as the means of sample extraction. Eighteen meters of heat-traced, insulated 25.4 cm pipe transported the slipstream to the pilot precipitator. Ambient air quality

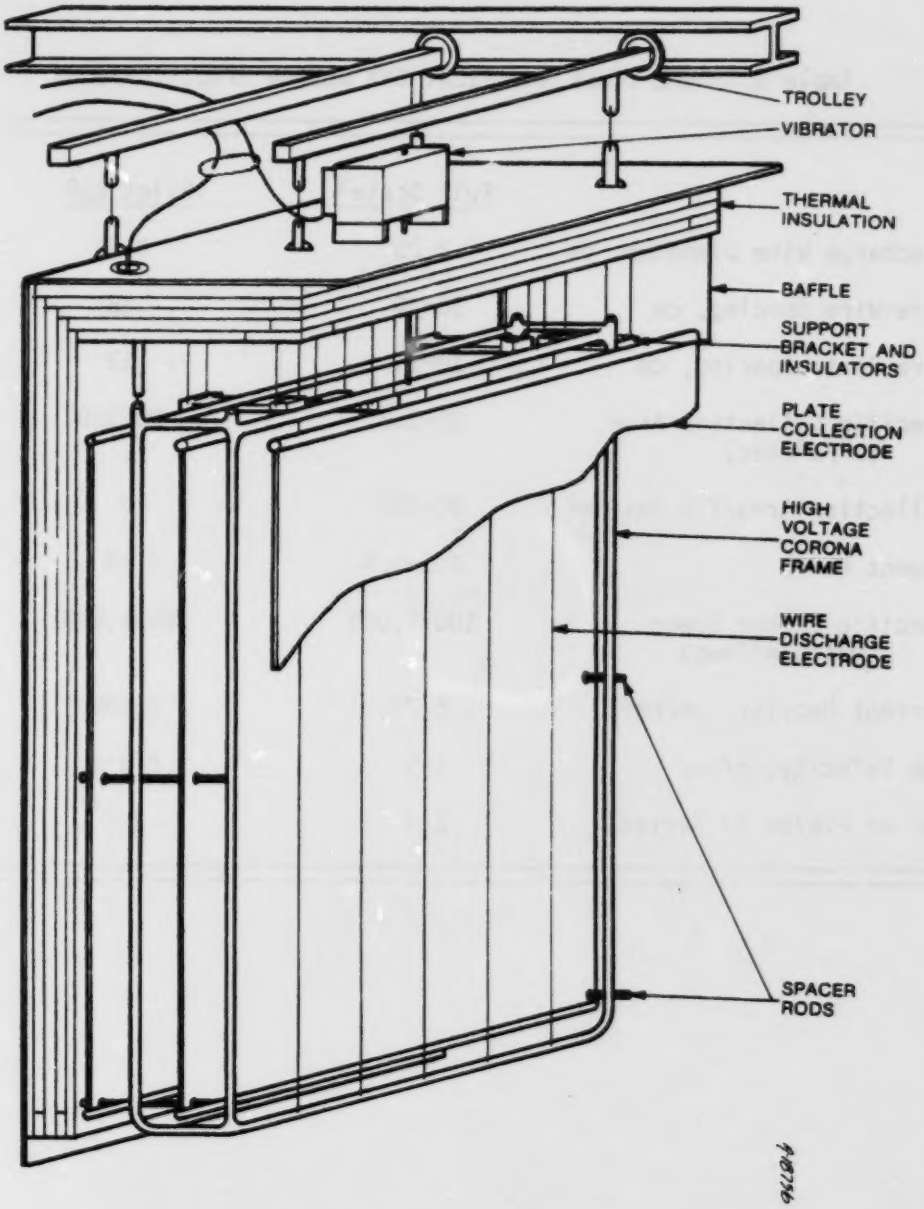


Figure 2. Removable high voltage field.

Table 3. FULL SCALE AND PILOT ESP DESIGN SPECIFICATIONS

	Full Scale[3]	Pilot ESP
Discharge Wire Diameter, cm	0.25	0.25
Wire-Wire Spacing, cm	10-30	18
Wire-Plate Spacing, cm	10-15	13
Specific Collection Area, ($m^2/m^3/sec$)	20-150	20-100
Collection Area/T-R Set, m^2	50-750	9
Aspect Ratio	0.5-1.5	0.67
Specific Corona Power ($watts/m^3/sec$)	100-1,000	100-1,000
Current Density, nA/cm^2	5-70	5-100
Gas Velocity, m/sec	1-5	0.5-2
No. of Fields in Series	2-8	2-5

standards dictated the need for returning the particulate-abated stream to the access locations for subsequent sulfur dioxide (SO_2) removal. An access door was fitted to the stack to accommodate the extraction and return connections, along with a 10.2 cm coupling for *in situ* resistivity measurements. Figure 3 illustrates the positioning of the access, ducting, process unit, and sampling and injection locations.

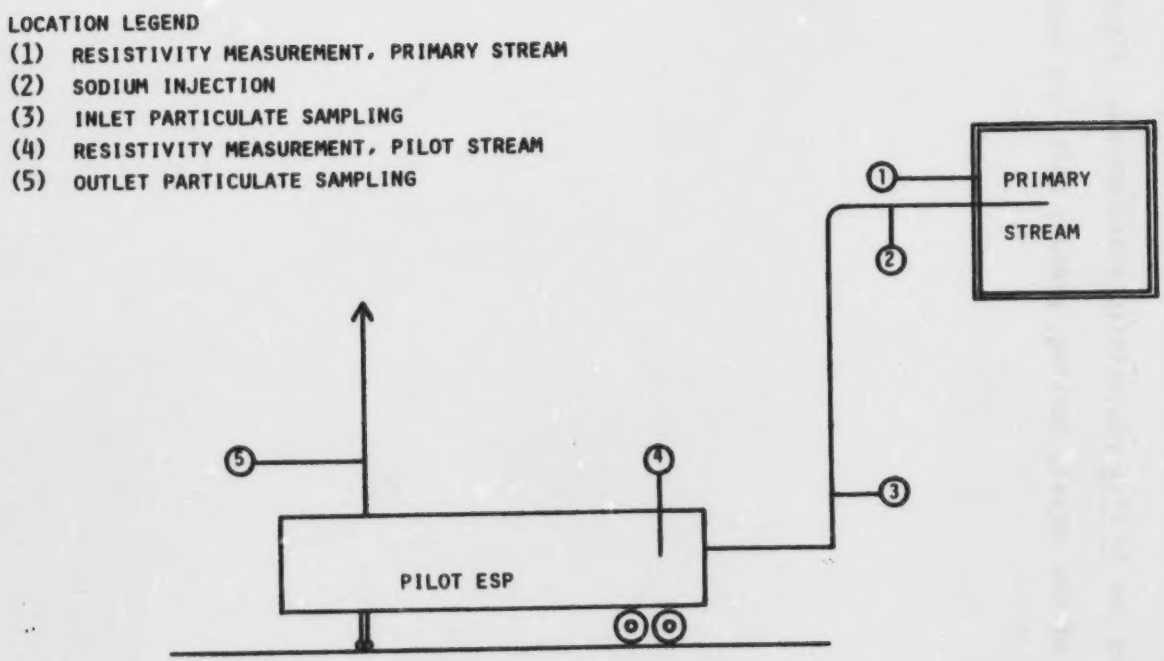


Figure 3. Pilot ESP site installation.

SECTION 4

PROGRAM METHODOLOGY

PILOT PRECIPITATOR OPERATION

To ensure that the test program was conducted on a sound basis with specific guidelines, a protocol for installation, preparation, operation and data acquisition was established and is discussed below.

Installation

Considerations for locating the slipstream access point required that:

1. The conditions of the process stream be typical for those of full-scale control unit installation.
2. A representative stream could be withdrawn from the process effluent, i.e., flow disturbances are relatively absent.
3. The location and routing be appropriate for the transport and maintenance of a representative stream.

Operation

The normal operating schedule allowed for one-week test increments, starting at noon Monday and continuing until Friday evening. Operating on a continuous rather than daily start-up/shutdown basis enhanced data credibility and reliability for the following reasons:

1. Steady state conditions would be maintained rather than approached.
2. Extended operating time would permit clearer illustration of time-related characteristics, e.g., flyash accumulation on corona wires and collection plates.

3. Corrosive conditions due to condensation accompanying start-up and shutdown periods would be minimized.

4. A uniform daily testing program could be more reliably established and maintained.

Because the reliability of the high voltage cables was limited, approximately half of the test was conducted on an interrupted rather than continuous schedule. Prior to weekly start-up, the precipitator's internal parts were cleaned in order to restore initial conditions. This process consisted of removing flyash from discharge wires and collection plates. Removal of the precipitated flyash between the base ash and sodium test increments was necessary to isolate the casual relationships of the flyash species. Since it has been shown that, due to reentrainment, rapping factors such as frequency and intensity have significant effects on effluent loading, the rapping cycles were terminated during the particulate measurement periods.

Data Acquisition

The following operating data were recorded on a semi-hourly basis:

- inlet gas temperature
- outlet gas temperature
- individual voltage levels
- individual current levels

Additionally, "V-I" data (corona discharge curves) were generated before and after the daily sampling periods, and following the weekly internal cleaning. Sampling activities were conducted during normal working hours, with operating data acquisition and analytical activities being performed during the remainder of the day.

PARTICULATE MEASUREMENTS

Particulate measurements were taken using a sample train, as depicted schematically in Figure 4. Stainless steel filter holders were used with

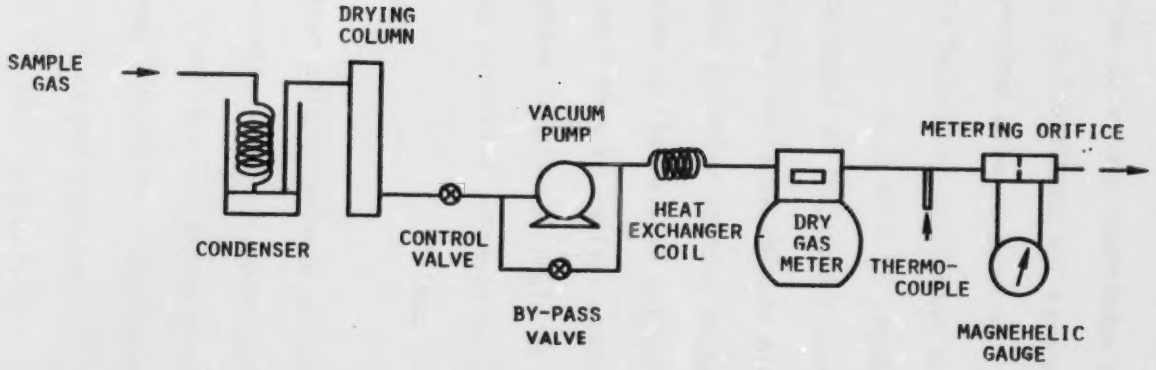


Figure 4. Sample train schematic.

47 mm glass fiber filters to provide mass concentration data. Seven stage Brinks[R] and University of Washington (U of W) Mark III[R] impactors containing greased substrates were employed to measure the inlet and outlet size distributions, respectively. A common grease mixture (20 percent Apiezon "H" with benzene) was applied to the metallic substrates used with each impactor. Quality assurance measures and procedures for conditioning, greasing, and weighing substrates were conducted in accordance with Reference 6. Sample ports, available at virtual plug-flow locations, consisted of 2.54 cm stainless steel couplings welded to the duct, 27.3 cm I. D.

Extractive probes (6 mm stainless tubing, 30 cm long) were mounted in the ports and fitted with interchangeable nozzles to allow isokinetic sample removal. The probes were positioned at average velocity locations. Particulate concentrations and size distribution determinations were conducted at inlet and outlet locations. Two determinations of each type at both locations constituted a test unit consisting of eight individual measurements. Substrate and filter weight gains were processed nightly, providing qualitative feedback on precipitator performance and data quality.

RESISTIVITY MEASUREMENTS

A point-to-plane probe was used to measure <u>in situ</u> resistivity. Maintenance and procedural operations were conducted in accordance with the recommended practice for resistivity measurements. The primary location for these determinations was a reduced velocity area (3-5 m/sec.) immediately upstream from the first high voltage field. Longer sampling periods (1-2 hours) were required for the relaxed flow region (1-2 hours) than for the primary process (½-1 hour). Quality assurance tests were conducted <u>in situ</u> at the slipstream access, yielding consistently comparable resistivity levels.

Three values of resistivity are reported for each test unit, and are labeled:

- P_A (Spark Method at Breakdown Strength)
- P_B (Spark Method at Electric Field) Strength = 10 kv/cm
- P_C (Re: V-I Method).

Each resistivity value is calculated as the ratio of the electric field to current density. A complete discussion of the equipment, procedure, and significance of resistivity measurement is contained in Reference 7.

SECTION 5

DISCUSSION OF PERFORMANCE RESULTS

The data base presented in the following sections consists of five measurement categories:

- mass balance of sodium material
- specific resistivity
- operating measurements
- particulate mass measurements
- particulate size distribution measurements

Unavoidable fluctuations in boiler load, gas temperature, and precipitator operation occurred throughout the test program, but these fluctuations did not, in the final analysis, obscure the results of the demonstration test program. The data clearly support the general conclusions that, for sodium carbonate addition:

- specific resistivity of the particulate was reduced,
- precipitator operating levels were improved, and
- particulate collection efficiency (total and fractional) was enhanced.

CONDITIONING BY SODIUM CARBONATE ADDITION

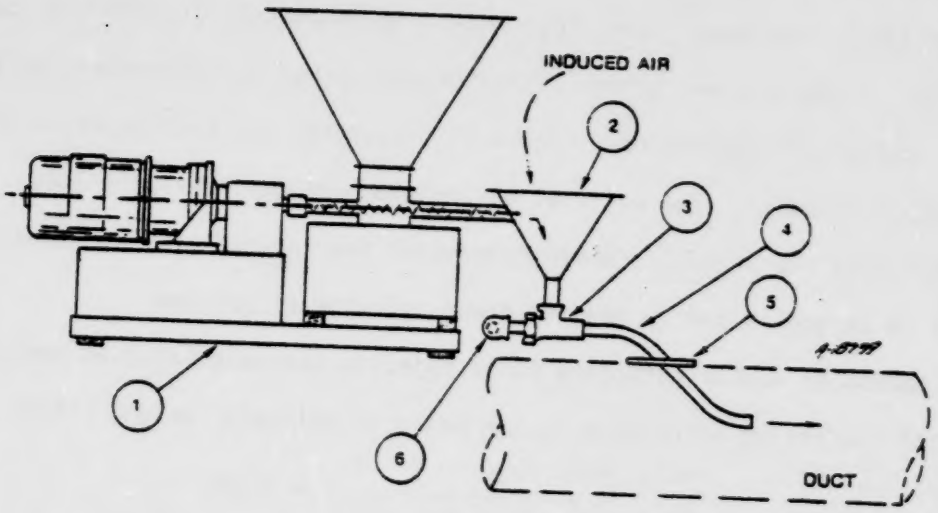
Resistivity conditioning was achieved by metering and pneumatically injecting anhydrous sodium carbonate into the slipstream immediately adjacent to the primary stream (Figure 3). Mixing was achieved by injecting the material

into the center of the slipstream, and transporting the mixture through 18.3 m of duct, four 90° elbows, and the flow rectification sections at the trailer entrance. A previous in-house program, in which sodium carbonate was injected 10.67 m upstream from the flow rectification section, demonstrated, by analyses of samples taken from each field, that equal and consistent distribution could be achieved. Injection was accomplished through use of a screwfeeder, an air injector, and an air compressor. Figure 5 illustrates the configuration of the injection assembly. The material was metered through the calibrated screwfeeder into the injector, where compressed and induced air entrained and delivered it through a gently bending probe into the slipstream.

The amount of sodium carbonate to be injected was calculated as sodium oxide, with conversion being made on the basis of molecular weight ratio:

$$\frac{\text{Mole. Wgt, } Na_2O = 62}{\text{Mole. Wgt, } Na_2O\ CO = 106} = 0.585$$

Thus, under most conditions, 11.5 gm/min of sodium carbonate was added to represent 6.7 gm/min as sodium oxide, reflecting a 5.0 percent injection rate relative to a mean flyash rate of 135 gm/min. Analysis of the collected ash from the high voltage fields (Table 4) shows an average 1.2 percent differential collection rate in sodium oxide content between the base and conditional ash. These independent determinations therefore reveal an unaccountable portion for a mass balance of sodium material (5% injection rate but 1.2% finally measured). The discrepancy between the injection and collection rates suggests two possible occurrences: (a) deposition of the sodium material between injection and electrostatic collection, and (b) penetration of the sodium through the ESP. The latter contingency cannot be well supported, since the unaccountable portion of sodium carbonate is ten times the concentra-



1. VIBRASCREW FEEDER SCR-20, 3/8 SCREW, 0-0.1 CFH
2. FABRICATED CONNECTION BETWEEN FEEDER AND INJECTOR
3. JET INJECTOR, McMASTER-CARR, P.O. BOX 4355, CHICAGO 60680, CAT. 4977K-11
4. FABRICATED PIPE
5. COVER PLATE APPROX. 6" DIAMETER, WELDED TO BENT PIPE
6. COMPRESSED AIR SUPPLY LINE, APPROX. 70 PSIG

Figure 5. Depiction of sodium injection equipment.

Table 4 FLYASH CONSTITUENCY DATA

NO Sodium Injection

	6/24 Cell 1	6/24 Cell 2	6/24 Cell 3	6/30 Cell 1	6/30 Cell 2	6/30 Cell 5	8/23 Cell 3	8/23 Cell 4	8/23 Cell 5	8/24 Cell 3	8/24 Cell 4	8/24 Cell 5	7/14 Cell 1	7/14 Cell 2	7/14 Cell 4	7/19 Cell 1	7/19 Cell 2	7/19 Cell 3	7/19 Cell 4	8/17 Cell 3	8/17 Cell 4
Li_2O	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.05
Na_2O	0.60	0.58	0.56	0.56	0.74	0.75	0.61	0.61	0.71	0.59	0.59	0.61	1.6	2.1	1.0	2.2	1.9	1.6	1.4	2.4	1.9
K_2O	0.8	0.7	1.0	0.7	0.7	0.9	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.5
MgO	7.2	7.5	7.7	5.8	6.4	6.7	6.5	6.8	6.5	6.4	6.8	6.8	7.0	6.7	5.7	6.2	6.4	5.8	6.8	6.8	6.4
CaO	18.5	18.3	19.5	17.0	17.7	17.8	19.6	19.3	18.6	19.3	20.5	19.7	18.1	17.8	18.7	18.0	18.2	19.0	18.3	20.3	20.2
Fe_2O_3	4.0	3.5	3.8	3.7	3.5	3.2	3.9	3.2	3.4	3.3	3.8	3.3	3.2	3.3	5.3	4.1	3.2	3.0	2.9	3.3	3.3
Al_2O_3	23.8	23.8	-	21.4	23.3	24.2	23.7	24.4	25.0	23.3	23.6	-	24.0	23.7	22.6	23.0	24.3	23.2	24.6	22.5	23.4
SiO_2	41.5	41.1	-	44.5	43.2	41.9	41.8	40.7	40.2	42.1	39.3	-	41.4	41.9	43.0	42.7	41.3	39.2	39.7	37.8	38.1
TiO_2	1.0	1.0	0.9	0.9	1.0	0.9	0.7	0.7	0.6	0.6	0.7	-	0.8	0.9	0.8	0.9	0.8	0.8	1.1	1.1	1.1
P_2O_5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.9	0.6	0.5	0.6	0.6	0.4	0.4	0.3	0.3	0.4	0.5	0.4	0.6	0.6
SO_3	1.1	-	-	1.3	-	-	1.2	1.4	1.7	1.2	1.5	-	1.5	1.8	-	1.9	1.6	1.7	-	1.8	2.2
LOI	0.5	0.5	0.7	0.5	0.6	0.6	0.3	0.2	0.6	0.5	0.4	-	1.3	1.6	1.4	1.6	1.3	0.9	1.2	2.0	1.3

Remarks: 1) All analyses done on ignited samples. On some samples, there are insufficient amounts to run a complete analysis.

2) Analyses performed by Southern Research Institute.

tion of penetrating ash. The author suggests that the unaccountable sodium material was deposited during transport to the ESP through a non-optimum injection system.

The term "conditioning" in the context of controlling particle resistivity usually implies the addition of moisture or chemicals to the carrier gas. In a broader sense, conditioning includes effectively controlling particle resistivity by any appropriate means, such as temperature or composition control.

Conditioning by sodium carbonate injection, unlike moisture and chemical conditioning, does not change the conductivity of the original flyash particles. The conditioning effect is achieved by simply injecting a conductive material into the stream, which, when collected on the plates with the original high resistivity material, provides ionic carriers or additional electrical paths for the corona current. The insulating effect of the high resistivity flyash is reduced, allowing the precipitator to treat the stream at a lower resistivity level. The benefit derived from sodium conditioning is that one gram of sodium oxide caused two grams of flyash to be collected. Numerical analysis correlating the precipitated amounts of sodium and the casual increase in flyash shows a 1.16/1.0 relationship.

The purpose of these tests was to determine the improvement in precipitator performance associated with sodium carbonate addition. To date, this approach to conditioning has several limitations:

- Some applications require large quantities of conductive material.
- Some economically viable conductive materials are unavailable.

- The material is difficult to adequately distribute into the process stream.
- Uncertainties result from selective precipitation of the conductive material.

RESISTIVITY DATA AND RESULTS

In order to quantify the resistivity suppression of sodium conditioning, resistivity measurements were taken on (1) the primary stream near the pilot stream access location, (2) the slipstream containing the base flyash, and (3) the slipstream containing the base ash plus sodium carbonate.

All determinations were made with an in situ probe designed by Southern Research Institute.[7] The design of the probe and the procedure provide the following data as presented in Table 5:

1. P_A - Resistivity value taken at the breakdown strength of the sample.
2. P_B - Resistivity value for electric field strength = 10 KV/CM.
3. P_C - Resistivity value determined by the comparison of volt-amp relationships before and after precipitation of the sample.
4. E_A - Electric field strength at breakdown.

P_A is the preferred resistivity value, because voltage is applied directly to the electrostatically-precipitated sample, and determination is made at the breakdown strength of the sampled ash layer.

The other two resistivity values, P_B and P_C, are less significant to precipitator applications, but are offered to support the comparison between the two ash species. The last column in Table 5, E_A, represents the breakdown strengths of the individual samples. Compilation of over 35 tests resulted in the following log-averaged resistivity values:

Table 5. RESISTIVITY DATA*

Run No.	P_A	P_B	P_C	E_A
6/12/77**	2.9 E12	2.1 E12	4.5 E11	41, 22, 24
6/23/77**	2.1 E12	2.7 E12	3.8 E11	10, 17, 12, 17
4	- - - -	- - - -	3.6 E11	- - - -
5	5.9 E11	5.2 E11	2.7 E11	19
6	1.1 E12	2.2 E12	2.1 E12	35
7	1.6 E11	- - - -	4.0 E11	4
8	4.1 E11	6.8 E11	7.3 E11	32, 27
9	5.0 E11	1.0 E11	7.6 E11	26, 26, 26
10	3.2 E11	5.6 E11	7.3 E11	10, 25, 27
11	1.0 E12	1.7 E12	2.2 E12	20
12	6.0 E12	1.0 E12	2.5 E12	25
13	2.1 E12	5.0 E12	2.2 E12	8, 50
14	- - - -	- - - -	1.5 E12	- - - -
15	- - - -	- - - -	6.2 E11	- - - -
16	2.0 E11	3.6 E11	1.5 E12	55, 33, 73
17	- - - -	- - - -	2.2 E12	- - - -
18	8.0 E11	1.3 E12	2.5 E12	29, 50, 40
19	4.1 E12	6.05 E12	2.6 E12	39, 26
20	2.5 E12	6.0 E12	2.8 E12	32, 37

P_A = Resistivity Determined by Spark Method @ Breakdown Field (OHM-CM)
P_B = Resistivity Determined by Spark Method @ Electric Field Strength = 10 KV/CM (OHM-CM)
P_C = Resistivity Determined by V-I Method (OHM-CM)
E_A = Electric Field Strength @ Breakdown (KV/CM)

2.17 E11 OHM-CM = Log Mean Resistivity for Conditioned Ash @ 107-115°C
3.70 E12 OHM-CM = Log Mean Resistivity for Base Ash @ 107-115°C
* Data Obtained at Pilot ESP Inlet
**Data Obtained on Primary Stream at the Pilot Stream Access Location

NOTE: All resistivity values are expressed in units of OHM-CM.

a. 2.5×10^{12} OHM-CM (on the primary stream at 130-135°C).

b. 2.1×10^{12} OHM-CM (on the slipstream at 107-115°C with the base ash).

c. 3.7×10^{11} OHM-CM (on the slipstream at 107-115° with the base ash and 1.2 percent sodium oxide/base ash addition).

Comparison of these values indicates that:

- The characteristic resistivity of the gas and particulate stream was preserved during transport to the pilot unit.
- A sixfold reduction in specific resistivity is attributable to sodium injection.

Research by Bickelhaupt has shown that, for surface resistivity of flyash, the alkali metal constituents, particularly sodium, serve as the principal charge carriers in the conduction process.[9] This observation led to two previous field tests demonstrating that sodium conditioning did reduce specific resistivity, and that the reduction was predictable by the relationship of:

$$P_1/P_2 = (W_2)^2/(W_1)^2$$

P_1 = measured resistivity in OHM-CM for W_2

P_2 = predicted resistivity in OHM-CM for W_2

W_1 = measured weight percent Na_2O in ash

W_2 = added weight percent Na_2O in ash.[10]

Demonstration of the sensitive and predictable relationship between sodium content and resistivity is shown from the test data:

For $W_1 = 0.63$, $W_2 = 1.79$, $P = 2.1 \times 10^{12}$:

$P_2 = 2.6 \times 10^{11}$ OHM-CM

The predicted value correlates with the measured resistivity value of 3.7×10^{11} OHM-C[illegible].

OPERATIONAL DATA

Operating corona points and the associated V-I data over the allowable range were taken regularly during the program. The operating corona data reflect the electrical conditions during the sampling period for a given test. It should be noted that the control of the transformer-rectifier sets was accomplished manually, as the pilot facility was not equipped with automatic controllers customarily included in full-sized precipitators. It should also be pointed out that the operating corona points were set 4 KV lower than the maximum allowed. This was done to prevent frequent high voltage cable breakdowns responsible for delays incurred during the initial testing phase.

Table 6 and Figure 6 depict actual and comparative current densities for the base ash and ash-with-sodium conditioning tests. The Table and Figure provide a histogram of the current densities related to on-line time following internal purging. The degradation rates are comparable for each species, but the base ash curves show more severe current reductions as they approach steady state conditions. The inlet field histograms reflect a 2-3 factor improvement in achievable current densities for the sodium conditioning test series, having achieved a 10 nA/cm^2 level compared to a 4 nA/cm^2 level for the base ash series. A consistently comparable relationship exists for the outlet fields, with the sodium series achieving 20 nA/cm^2, relative to 7 nA/cm^2. The second or middle field histogram indicates improvement for the sodium series, achieving 20 nA/cm^2 compared to 4 nA/cm^2 for the base ash.

Reasonable correlation exists between the independent resistivity measurements and the achievable precipitator current densities approaching steady state conditions. The relationship between resistivity (P) and current density (C. D.) is defined by P=E/C. D., where E is the dielectric (breakdown)

Table 6 PRECIPITATOR ELECTRICAL OPERATING DATA
SECONDARY VOLTAGE (KV), CURRENT DENSITY (nA/cm^2)

Base Flyash

Cell										
1	39,11	40,4.2	40,2.3							
2	39,21	40,3.1	40,1.1							
3				38,18	39,10	40,10	40,27	38,10	36,6.0	36,4.0
4				39,24	37,16	40,21	38,21	38,11	40,7.0	38,3.0
5 *	41,28	39,9.0	38,6.3	39,22	36,12	40,25	38,35	36,26	32,13	32,8.0
Time (days)	1	1 1/2	2	1/4	1/2	1	1/4	1	2	3
Test No.	1	2	3	11	12	13	17	18	19	20

Base Flyash + Sodium

Cell										
1	46,36	46,13	39,8.0	42,7.8						
2	39,27	42,16	36,9.0	41,19	44,9.5					
3			35,14	37,26	40,18	42,10	42,9.0	38,23	40,14	41-19
4			39,28	37,26	40,20	41,13	41,10	40,34	40,23	39-20
5	38,31	38,30	35,41	37,23	39,24	40,21	36,5.0	38,38	40,50	
Time	1/2	1	1 1/2	2	2 1/2	3	3 1/2	1/4	1	2
Test No.	4	5	6	7	8	9	10	14	15	16

* Elapsed time operating since internal purge.

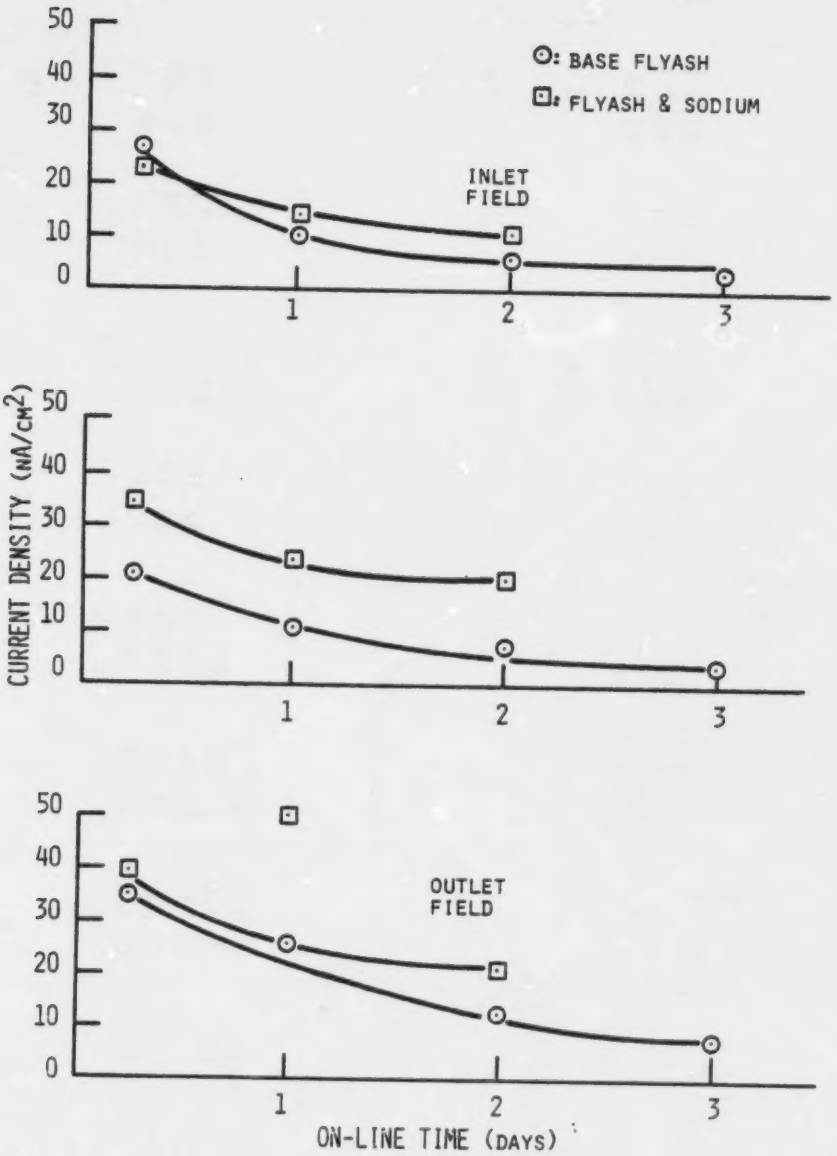


Figure 6. Current density vs. on-line time.

strength of the collected dust layer. Assigning the limiting breakdown strength of 10 KV/cm for each ash species, one can calculate the achievable current density from the log-averaged resistivity values. For the base ash ($P = 2.1 \times 10^{12}$ OHM-CM), the calculated current density is 4.8 nA/cm^2. For sodium-conditioned ash (3.7×10^{11} OHM-CM) the calculated value is 27 nA/cm^2. These theoretically calculated values correspond with the empirical values averaged from the operational data (5.0 and 15 nA/cm^2 respectively).

Comparison of the achievable voltage levels shown in Figure 7 for the two ashes is not as dramatic as the current density comparison but higher voltages were consistently obtained for the sodium treated ash.

The relationship of the voltage applied to each precipitation field and the resulting current (corona discharge curves) may be analyzed to gain insight into precipitator operation and performance. Figure 8 portrays the corona discharge curves for the base and conditioned ashes in graphic form. These curves show the characteristic profile of the volt-amp relationships from each field for steady state conditions. Knowledge of the meaning of the V-I curves is a fundamental tool necessary for proper operation of a precipitator. These data can characterize the following parameters/conditions:

- corona current leakage
- corona initiation voltage
- effective corona wire size
- effective wire-to-plate spacing
- alignment effects
- specific resistivity level
- specific collection area

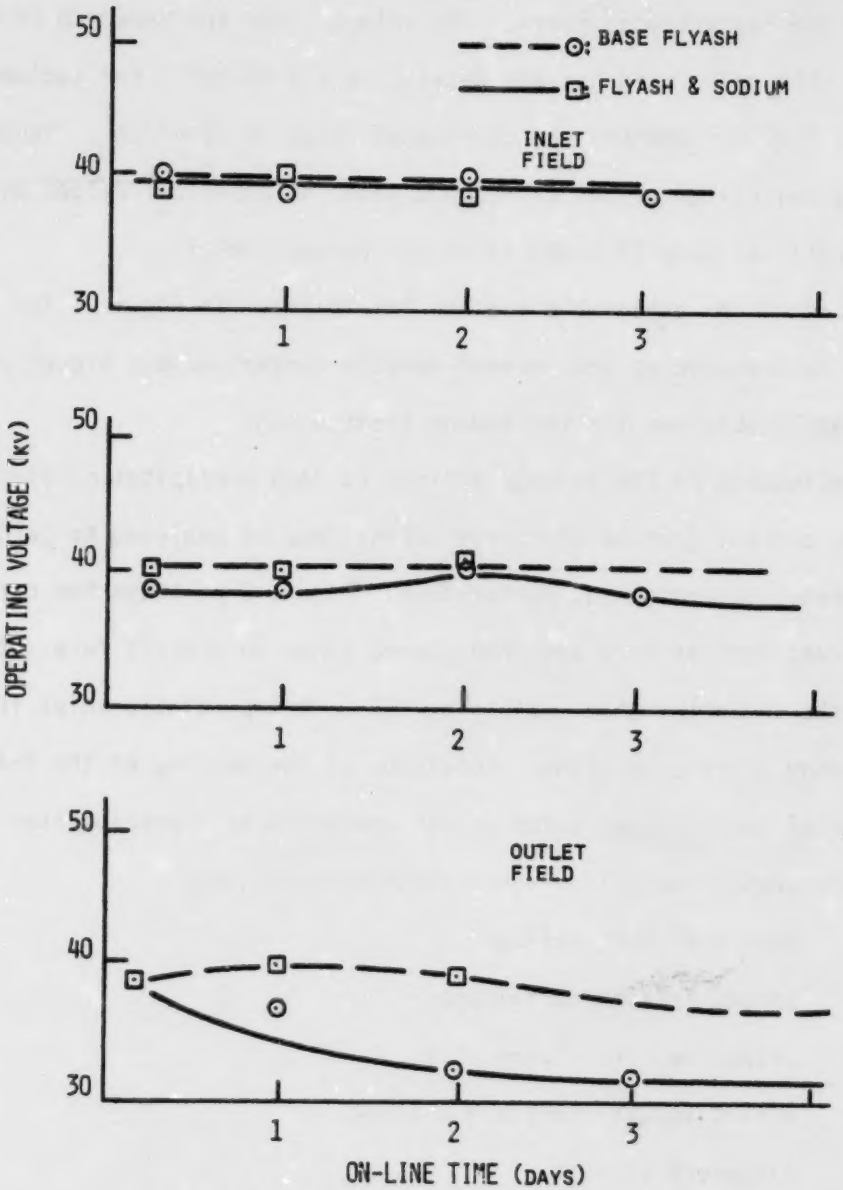


Figure 7. Operating voltage vs. on-line time.

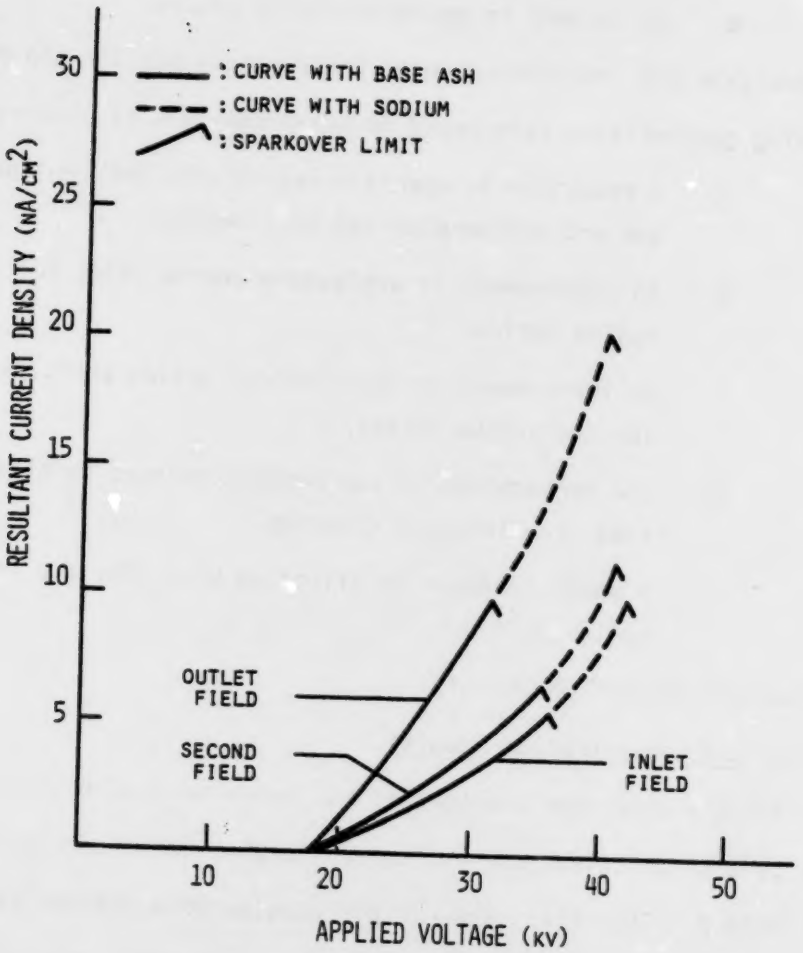


Figure 8. Corona discharge curves.

- breakdown voltage
- achievable current density
- concentration of fine particulate
- relative position of each precipitation field (inlet, second ..., outlet)
- variations in emission source process

Analysis and interpretation of these curves provide the basis for the following generalities referenced in other sections of this report:

1. A reduction in specific resistivity between the base ash and sodium-plus-ash test series.
2. An improvement in achievable corona point for the sodium series.
3. An improvement in expected collection performance for the sodium series.
4. The degradation in performance related to elapsed time from internal clean-up.
5. A small increase in effective wire size due to ash build-up.[11]

PARTICULATE COLLECTION RESULTS

Particulate Concentration Results

Table 7 shows the averages of the inlet and outlet concentrations per test used to calculate the average collection efficiency values in Figure 9 and Table 8. The inlet data exhibit considerable scatter resulting from the inconsistent probe catches apparent in the raw data. Due to the reduced flyash concentration and probe catch material, the outlet data offer reasonable agreement and consistency.

The apparent scatter in the particulate data depicts an ordered trend when the elapsed operating time from the precipitator "cleaning" is taken into

account. As previously noted, the corona wires and collection plates were restored to a clean state between conditioning and nonconditioning test series. The degradation in performance evident particularly for the base ash was caused by the accumulation of high resistivity ash on the collection plate and discharge electrodes. The marginal differences in performance for the tests after recent cleaning do not reflect the performance levels achievable for steady state operation. According to a best fit approach, sodium conditioning was responsible for reducing outlet loadings from 140 to 40 mg/Ds m^3 (52.4 ng to 15.5 ng/J), resulting in an improvement in collection efficiency from 98.19 to 99.46 percent.

Table 7. AVERAGE OF PARTICULATE DATA
(mg/SDm^3)

Test	Inlet	Outlet
1	8,657	182
2	11,630	133
3	14,310	394
4	5,198	29.1
5	7,076	45.6
6	19,950	40.1
7	4,259	46.3
8	8,290	47.6
9	3,824	38.2
10	5,977	36.2
11	4,642	33.2
12	4,630	30.5
13	4,649	35.3
14	8,061	17.3
15	8,633	22.9
16	7,282	34.1
17	5,587	50.4
18	3,847	44.6
19	5,908	117
20	8,610	137
	Mean: 7,557	Base Flyash Mean: 115.7
	Standard Deviation: 1,960	Sodium and Flyash Mean: 35.7

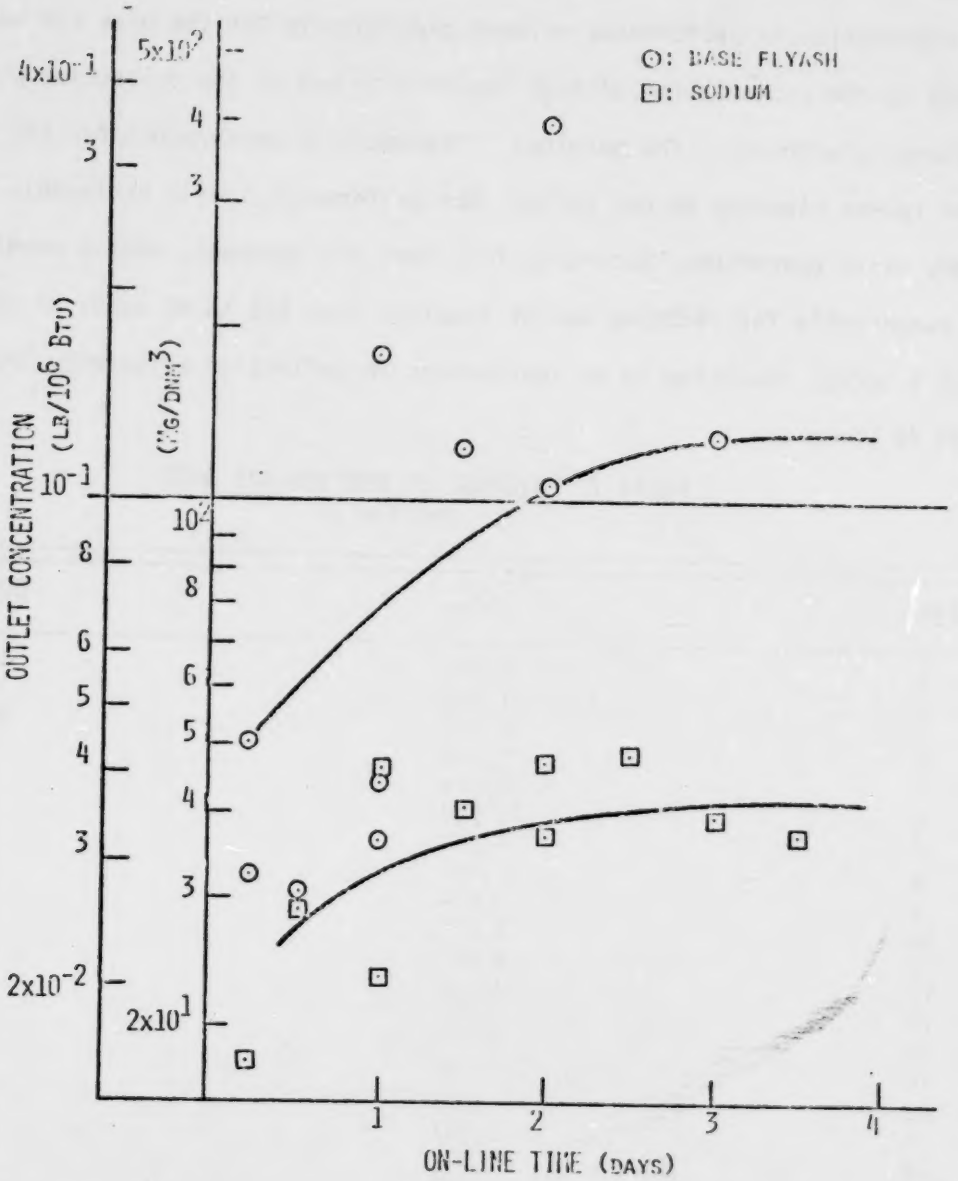


Figure 9. Precipitator collection performance.

Table 8 PARTICLE SIZE DATA AND FRACTION EFFICIENCY RESULTS[1]

Test No.	Mass Mean Diameter		Fractional Efficiency @ (μm)			
	Inlet	Outlet	0.3	0.5	1.0	3.0
1	8.6	1.6	29.3	42.3	90.7	89.7
2	9.7	1.7	89.7	90.9	94.9	99.2
3	26.0	3.5	87.9	90.5	87.2	96.0
4	13.5					
5	13.0	1.6	85.7	88.3	93.5	99.7
6	8.8	1.6	93.3	94.0	97.4	99.5
7	7.4	1.2	93.2	94.6	97.7	99.5
8	7.8	1.4	94.9	96.4	98.7	99.8
9	7.4	1.7	79.6	83.7	94.9	99.8
10	9.9	3.0	93.3	95.6	97.8	99.6
11	11.5	2.1	37.1	71.2	97.7	99.6
12	21.0	1.9	61.1	72.0	97.0	99.4
13	8.0	1.2	92.5	95.9	98.7	99.9
14	23.3	1.4	96.7	98.5	99.1	99.9
15	17.0	2.3	91.5	93.4	98.1	99.9
16	16.0	4.8	98.3	98.4	99.1	99.9
17	12.0	2.1	37.5	78.7	93.2	99.7
18	22.5	1.4	85.0	88.6	97.0	99.7
19	27.0	5.5	90.7	93.5	93.1	99.5
20	29.0	4.7	83.2	88.0	90.0	96.0
Base ash mean:		2.6	69.4	81.2	93.9	98.8
Sodium mean:		2.1	91.8	93.7	97.4	99.7

[1]Data obtained from daily averages.

PARTICLE SIZE AND FRACTIONAL EFFICIENCY RESULTS

Brinks and the U of W impactors were employed for obtaining size measurements on the inlet and outlet streams, respectively. Quality assurance measures and procedures for conditioning and weighing substrates were performed in consistence with EPA/IERL specifications. Due to small weight losses on the greased substrates for the U of W, trial impactor flowrate was reduced for

all subsequent tests from 189cc/S to 142cc/S. Evidence of substrate scouring was consequently eliminated with flowrate reduction.

Table 9 presents the particle size data and fractional efficiency results for all test runs. All particle diameters are stated in aerodynamic terms μm. Mass mean diameter on the inlet ranged from 8-29 μ, with an average M.M.D. of 15 μ. The outlet stream contained M.M.D's from 1.2--5.5 μ, with 2.1 μ and 2.6 μ being the average mean diameter for the sodium conditioning and base ash effluents, respectively. Figure 10 demonstrates the improved fractional collection performance associated with sodium conditioning, particularly in the submicron range.

Table 9 SUMMARY OF PARTICULATE DATA AND EFFICIENCY RESULTS

Data	Base Flyash	Base Ash with Sodium
Inlet concentration (Mg/DNM^3)	7,550	7,550
Outlet concentration (Mg/DNM^3)	140	40
Inlet mean particle size (μ)	15	15
Outlet mean particle size (μ)	2.6	2.1
Efficiency		
Total mass (% wt.)	98.2	99.5
Fractional @:		
3.0 μm	98.8	99.7
1.0 μm	94	98
0.5 μm	81	94
0.3 μm	70	92

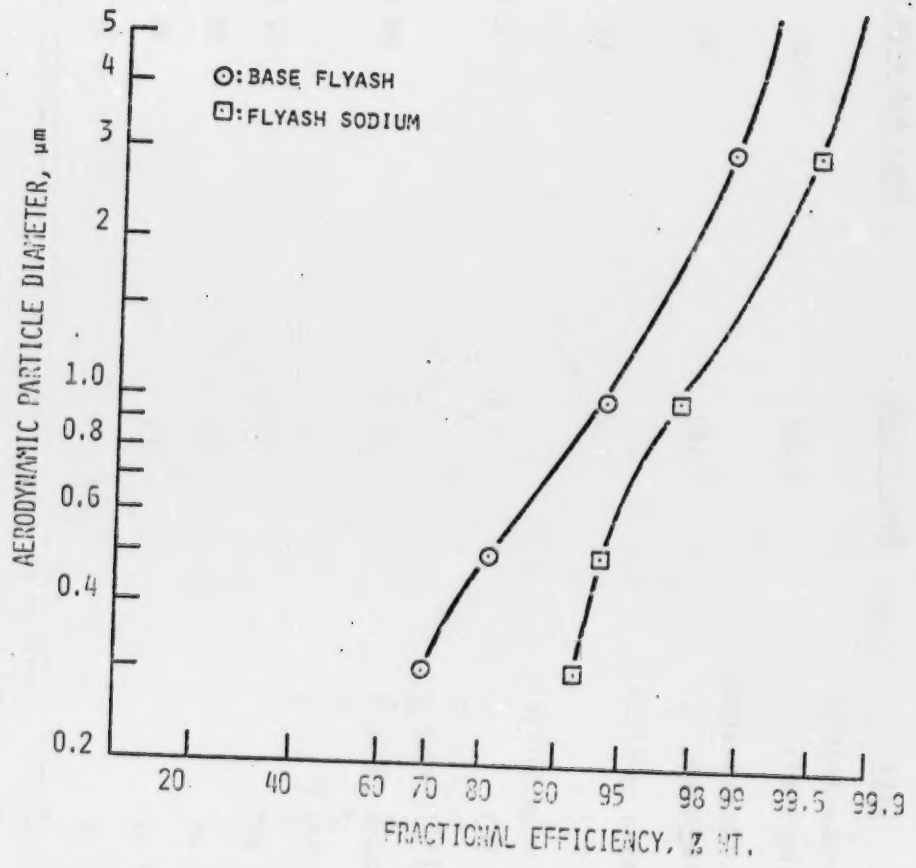


Figure 10. Comparison of mean fractional efficiency results.

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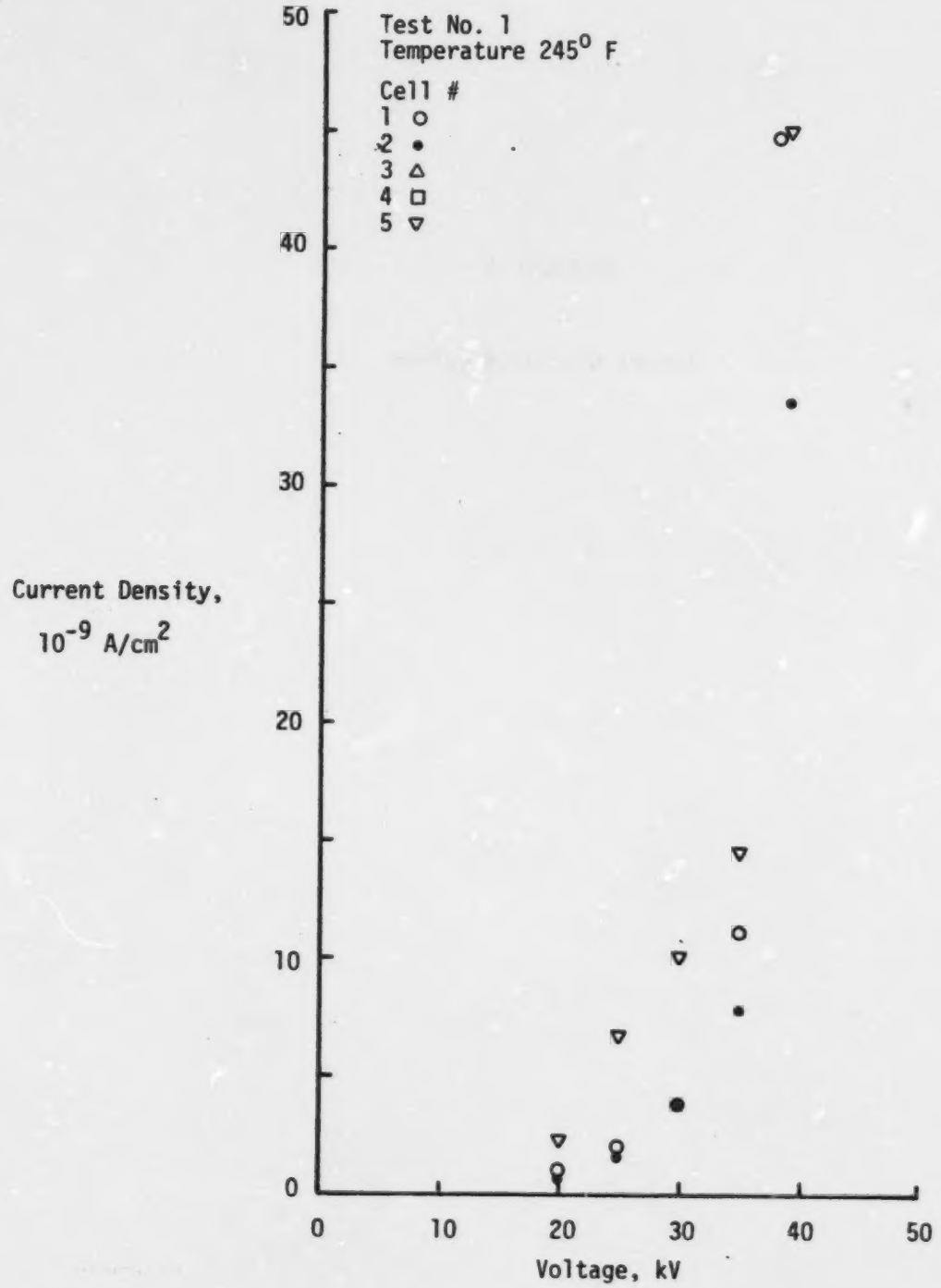
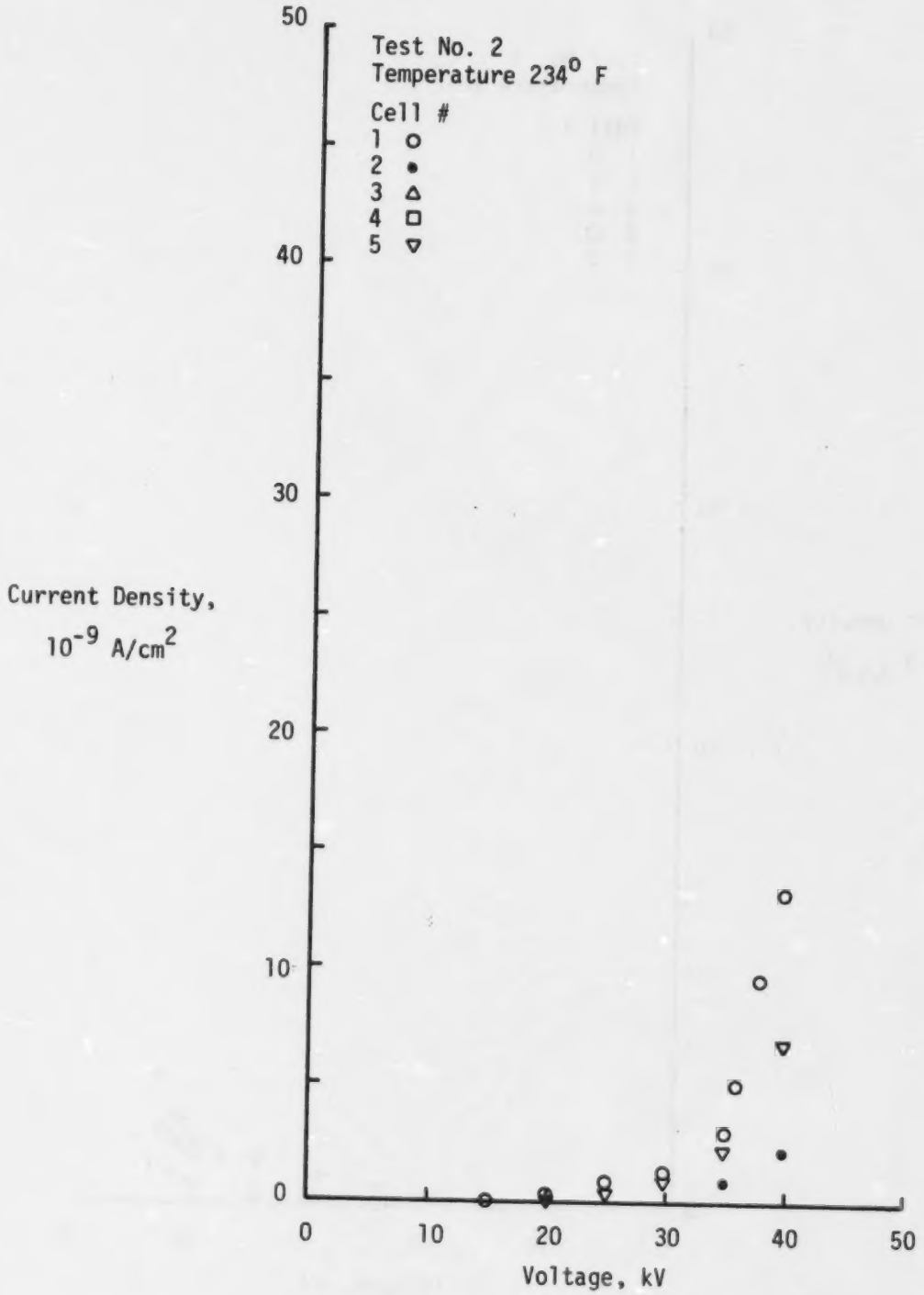
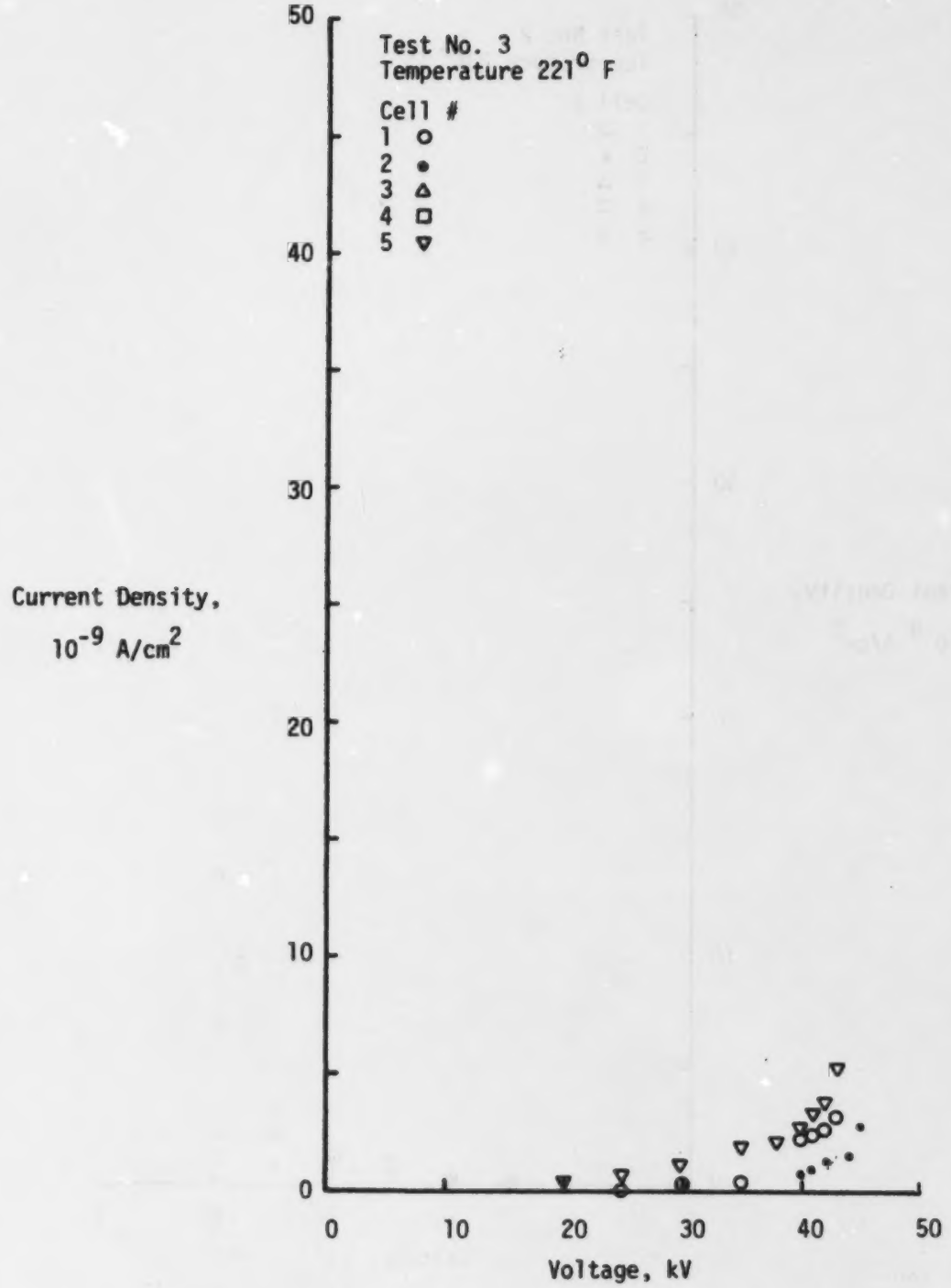
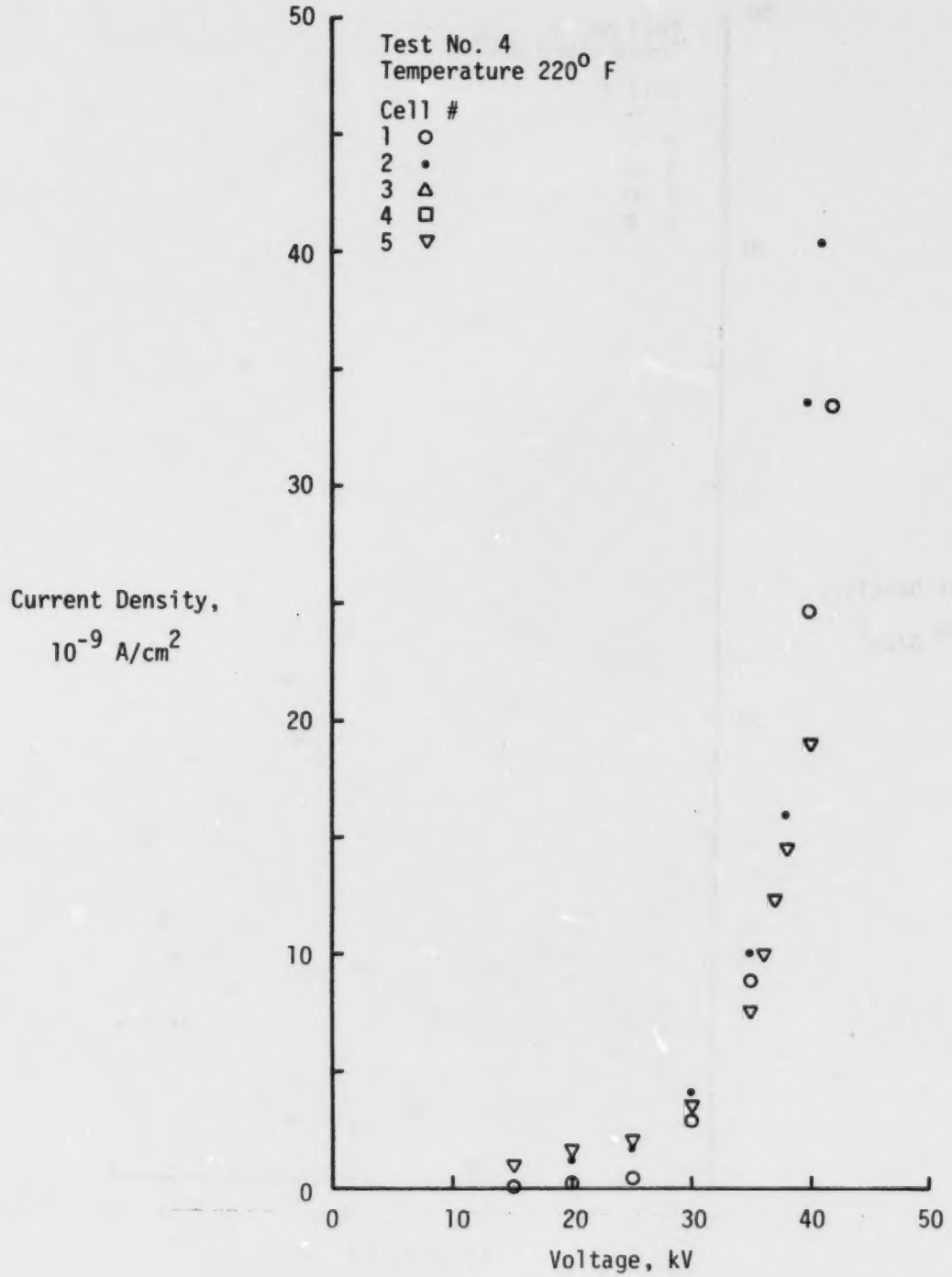
APPENDIX A

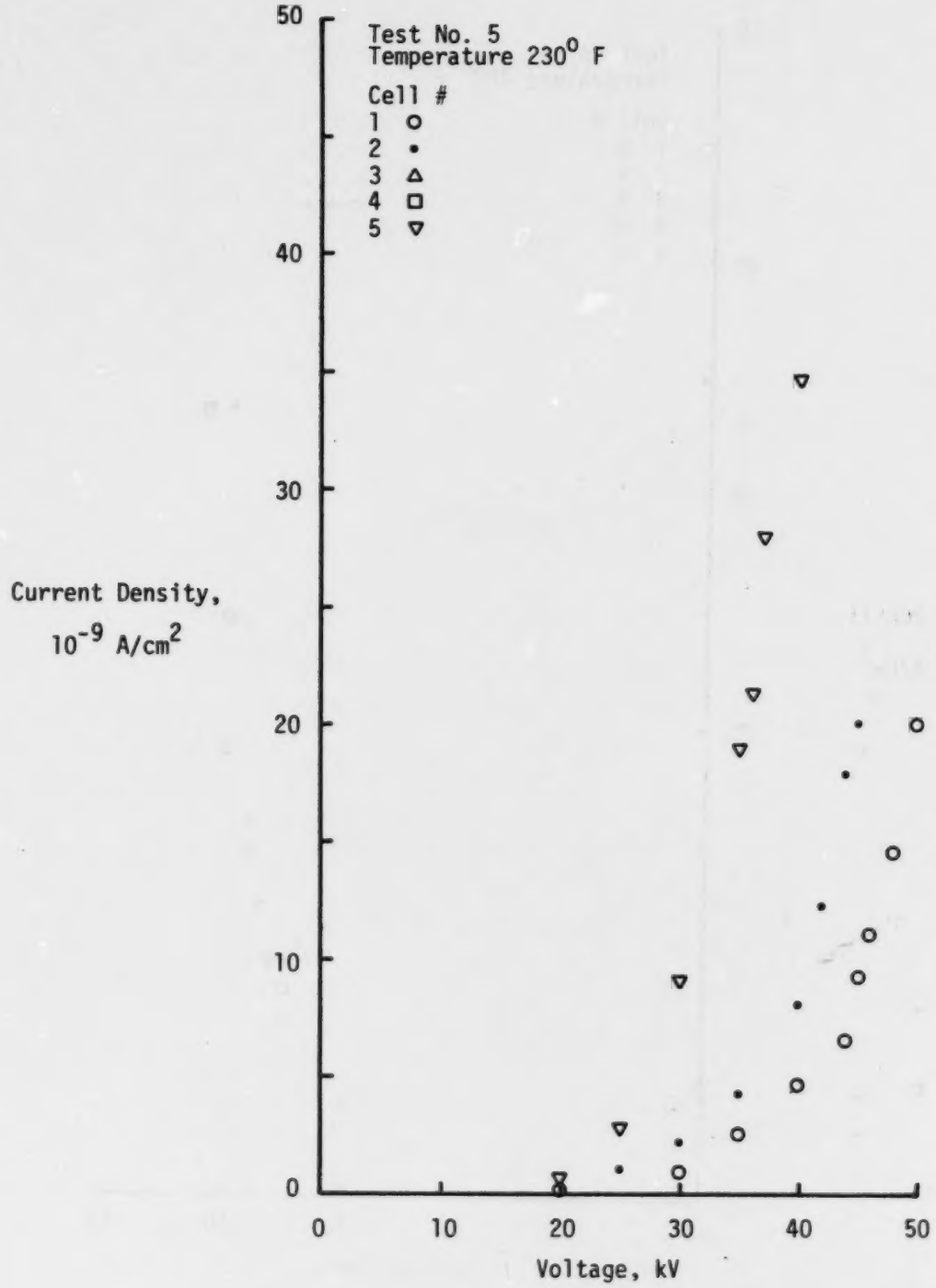
Corona Discharge Curves

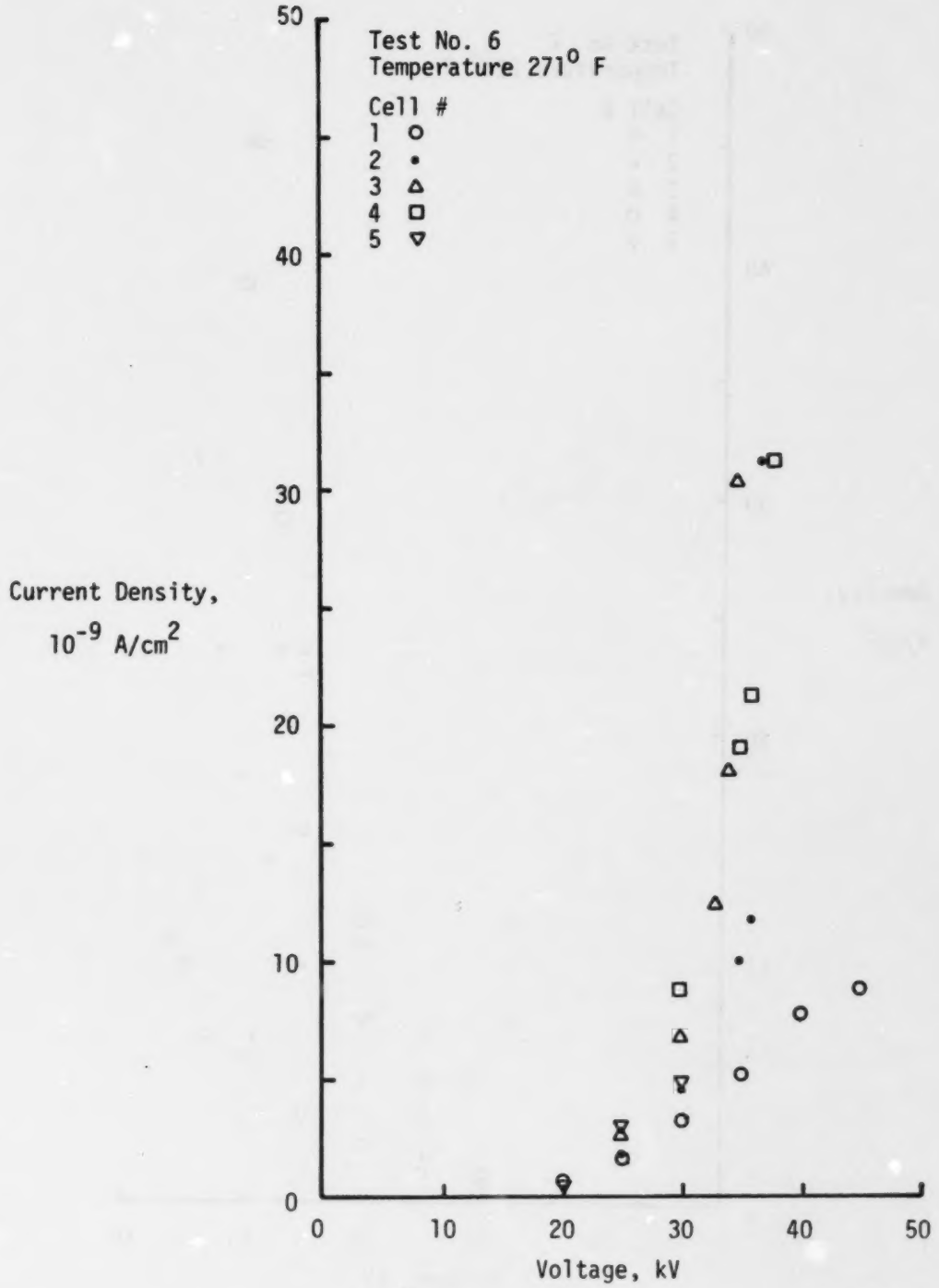

Test No. 1
Temperature 245° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

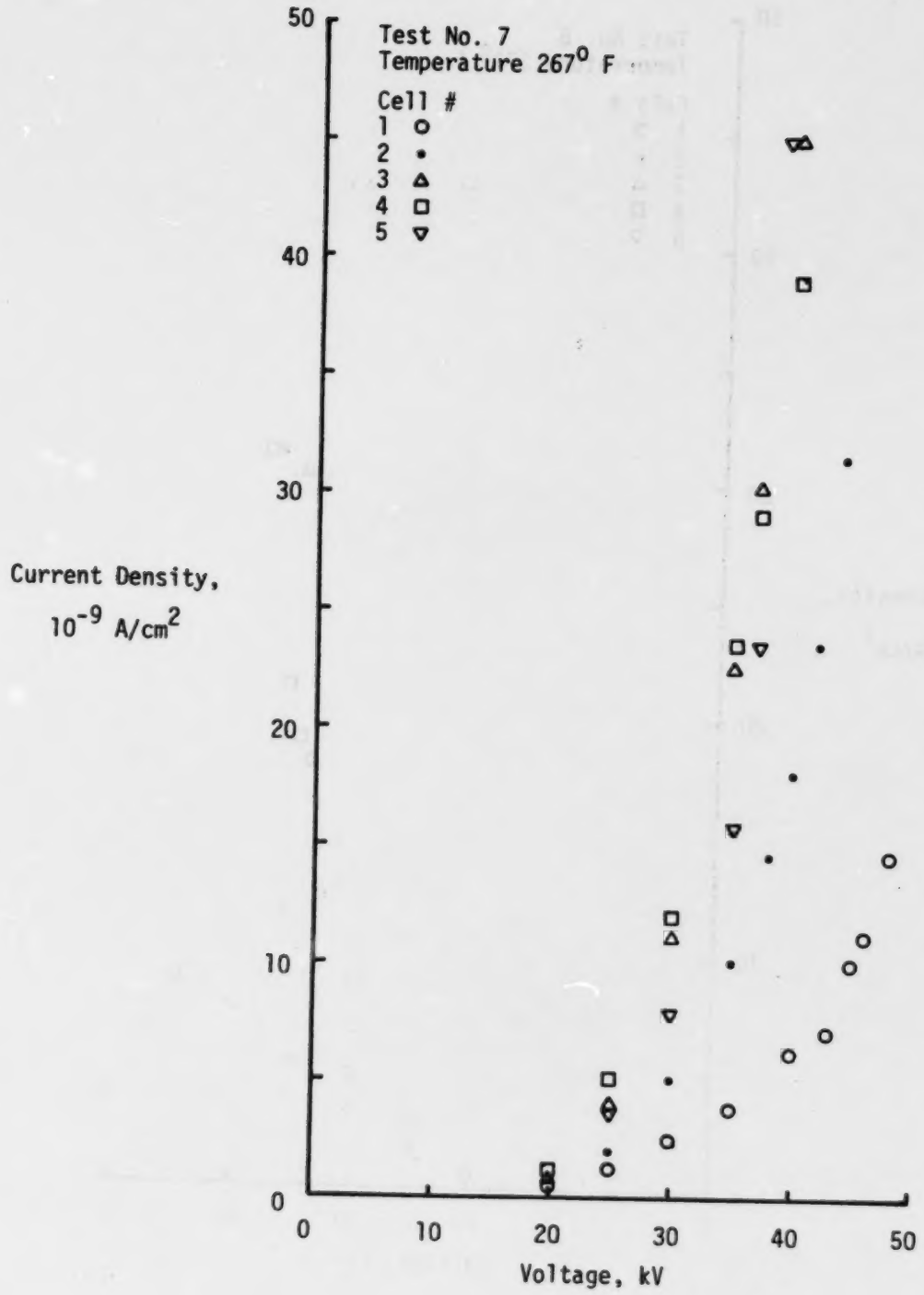

Test No. 2
Temperature 234° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

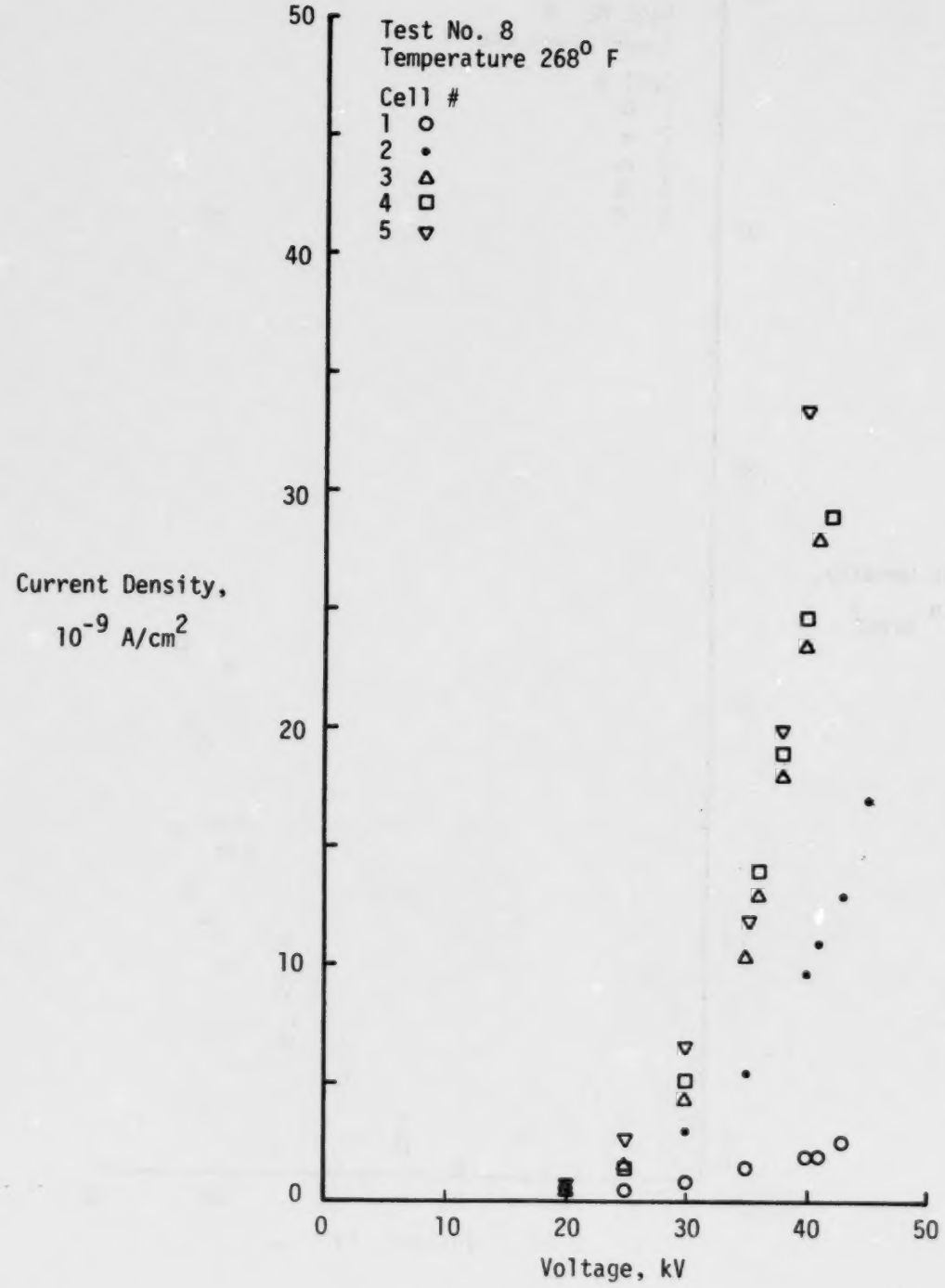

Test No. 3
Temperature 221° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

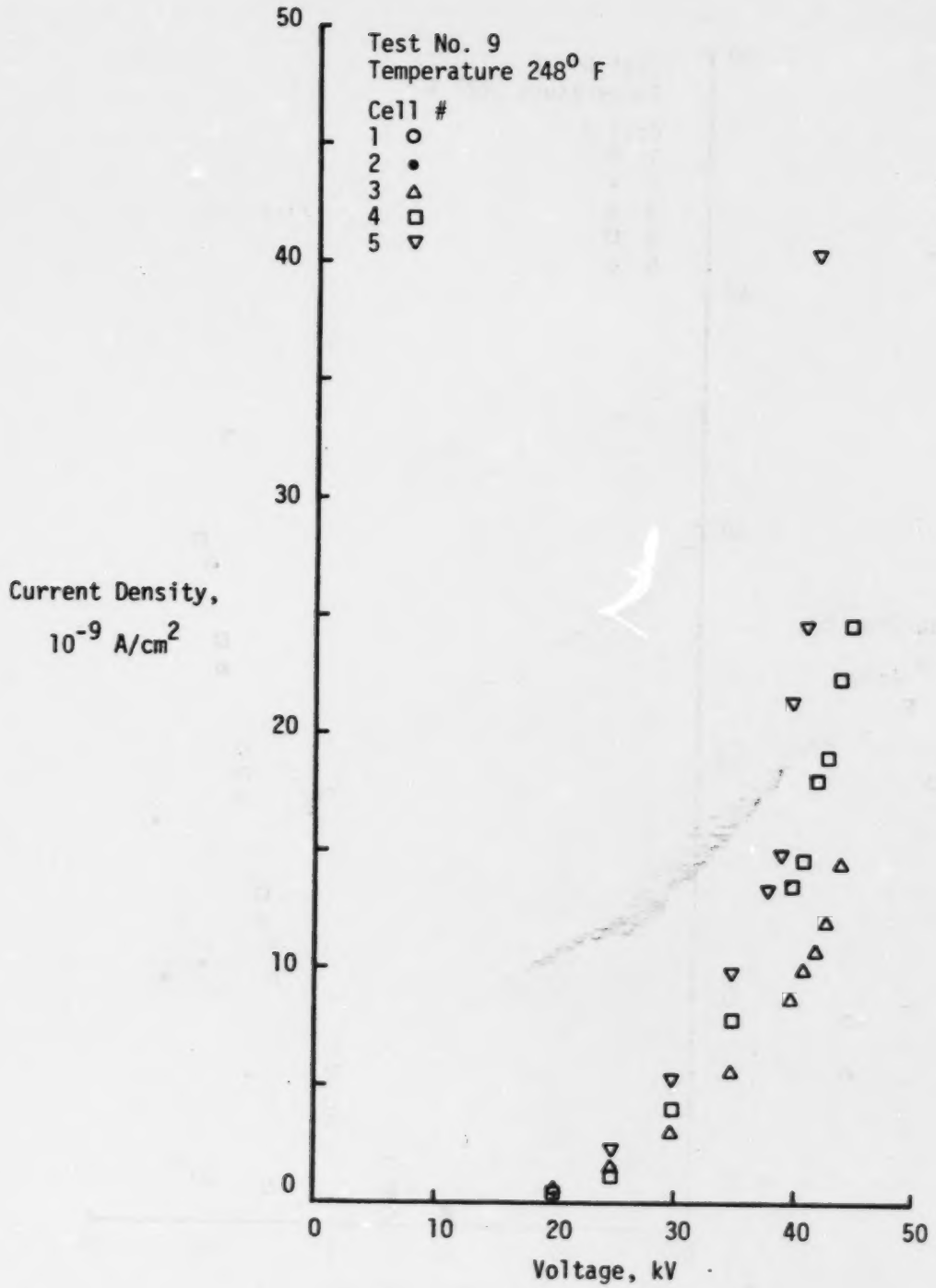

Test No. 4
Temperature 220° F
Cell #
1 ○
2 •
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

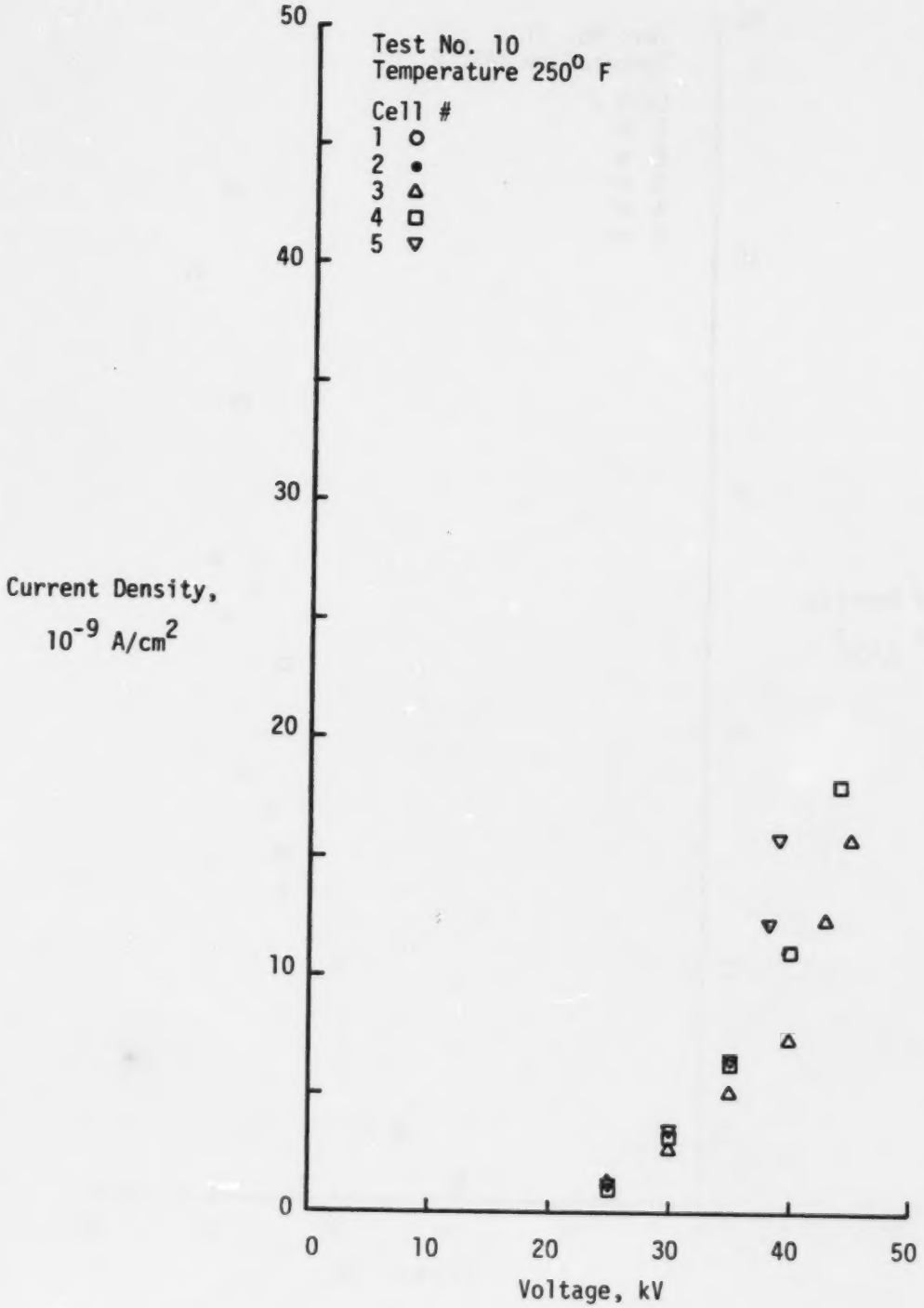

Test No. 5
Temperature 230° F
Cell #
1 ○
2 •
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

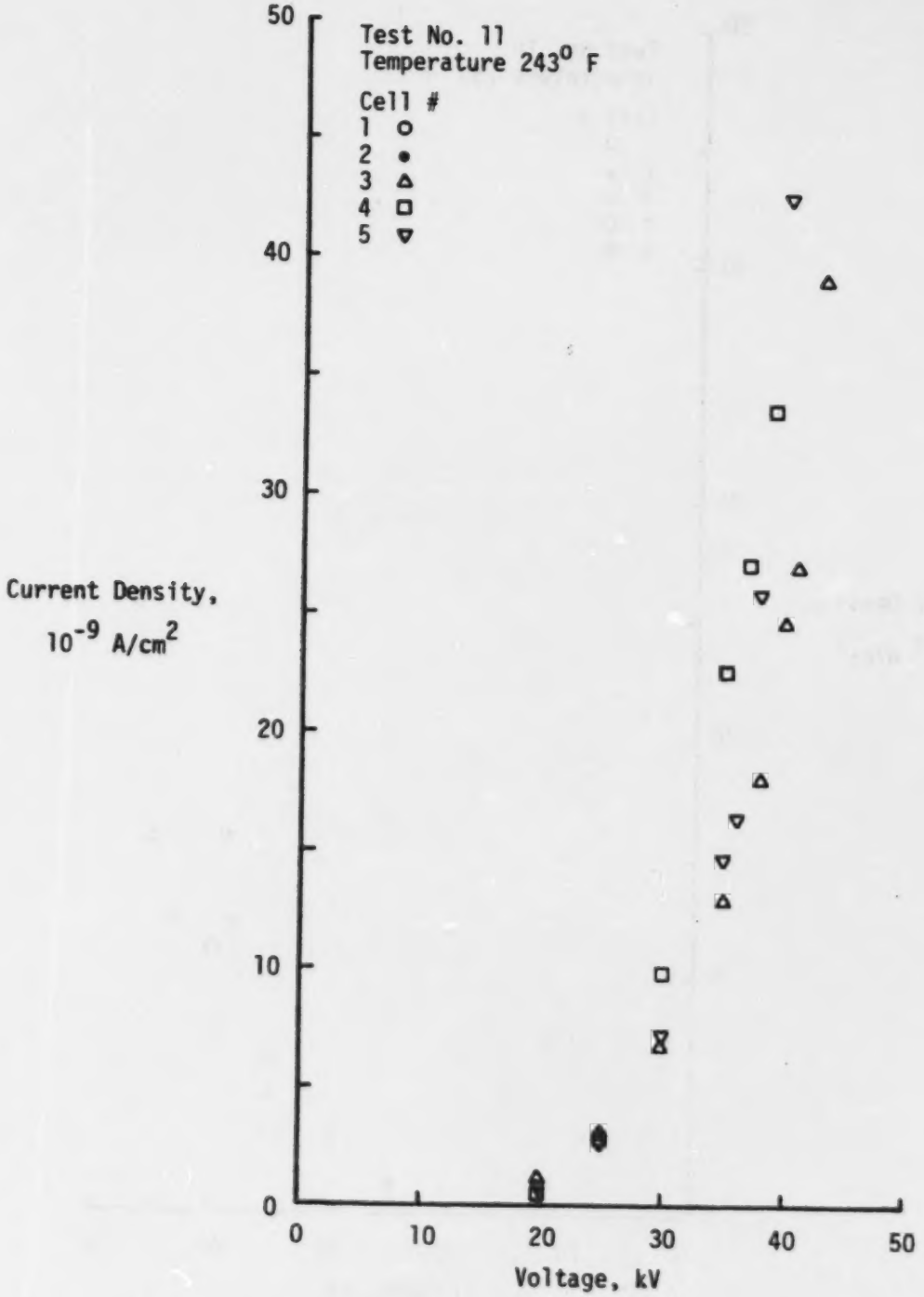

Test No. 6
Temperature 271° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

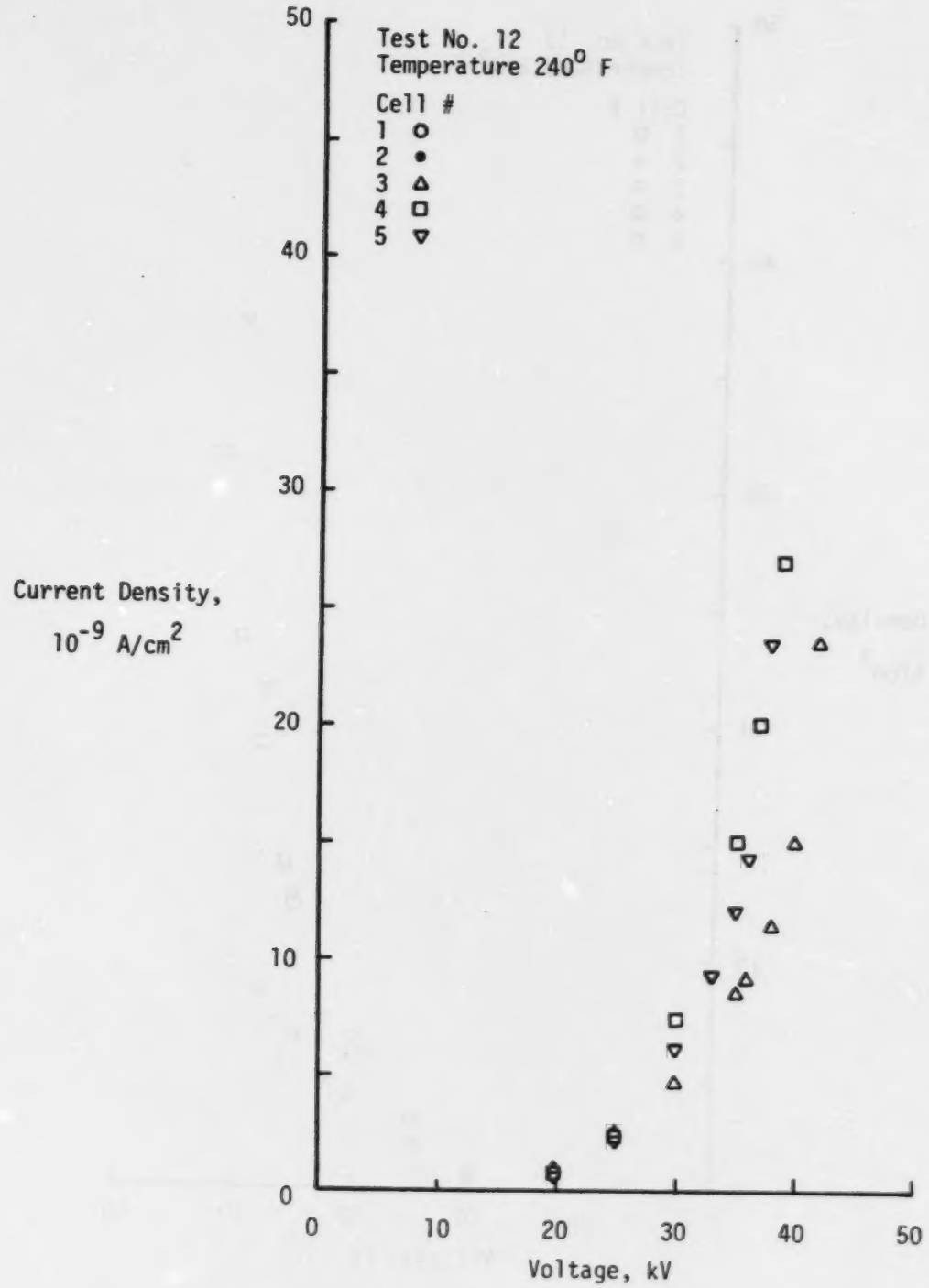

Test No. 7
Temperature 267° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
Voltage, kV
0
10
20
30
40
50

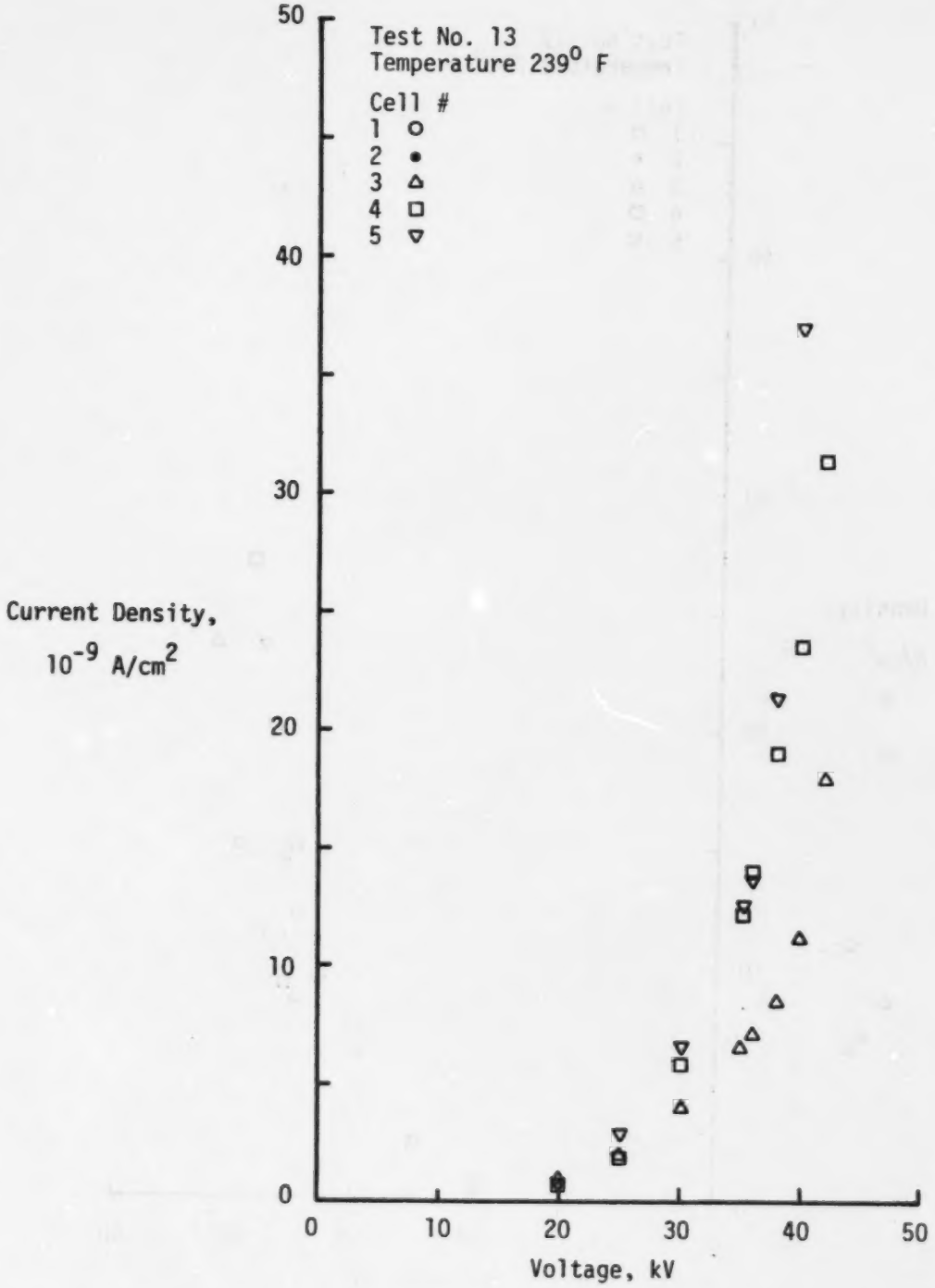

Test No. 8
Temperature 268° F
Cell #
1 ○
2 •
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

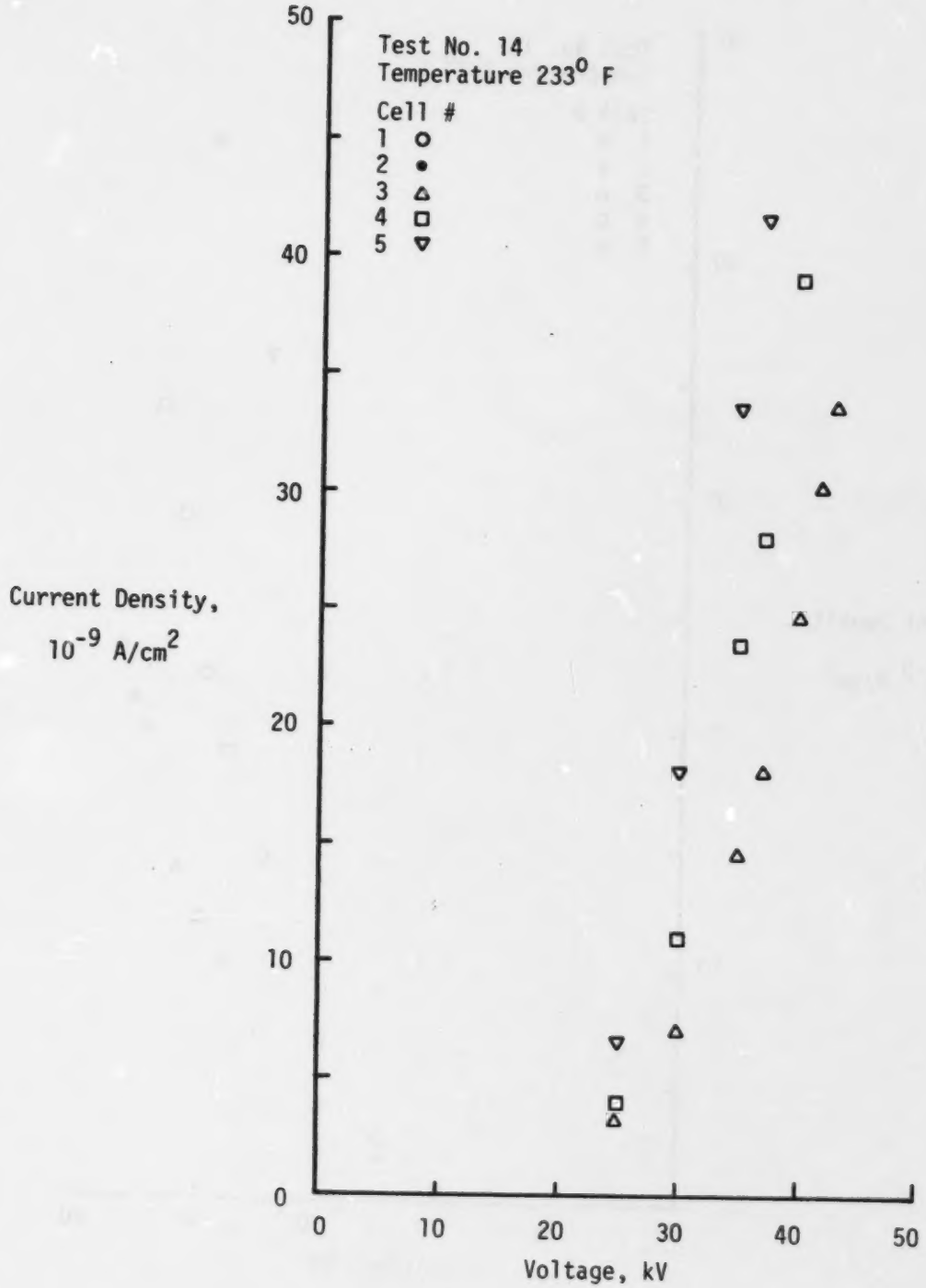

Test No. 9
Temperature 248° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

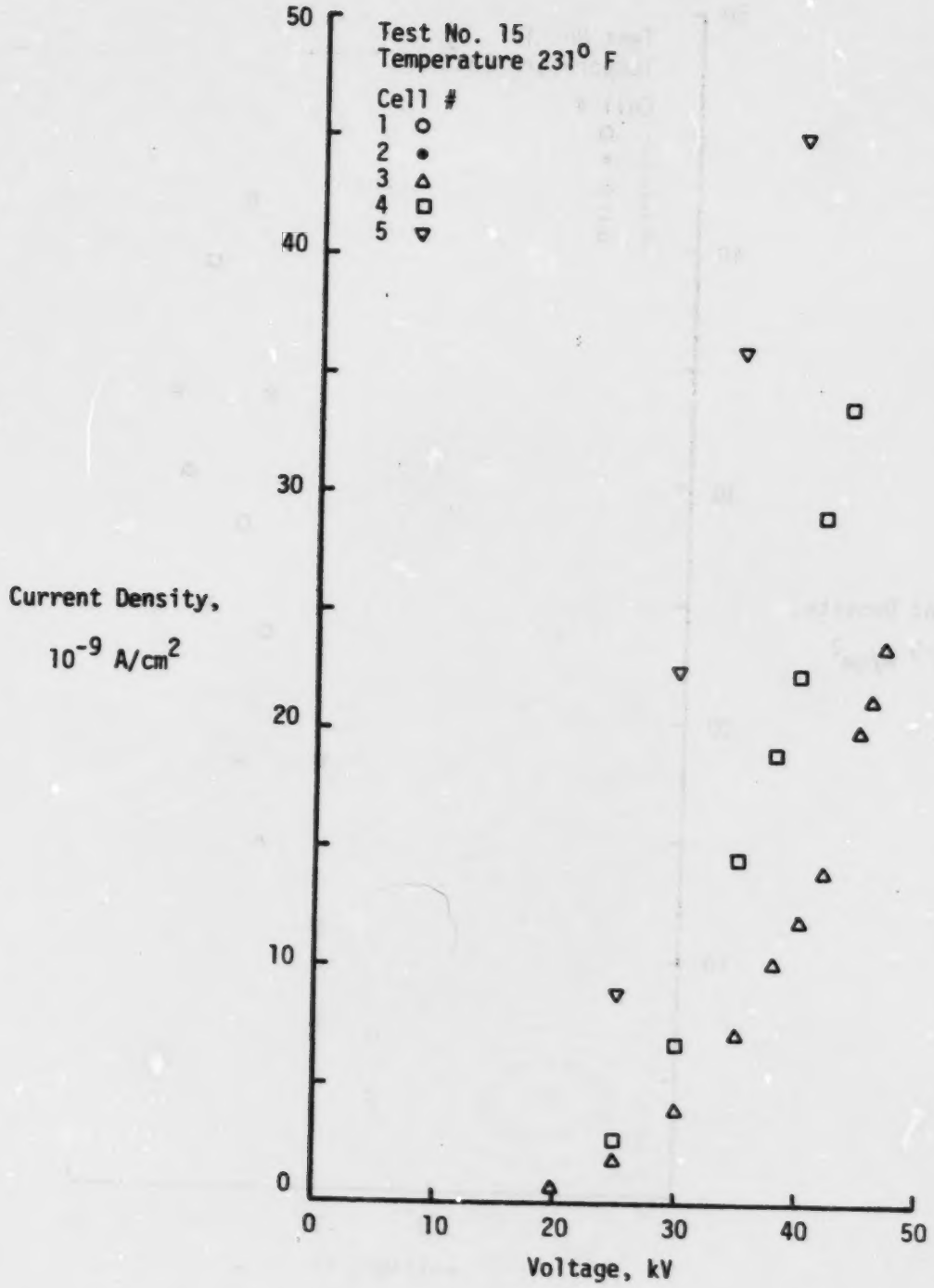

Test No. 10
Temperature 250° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

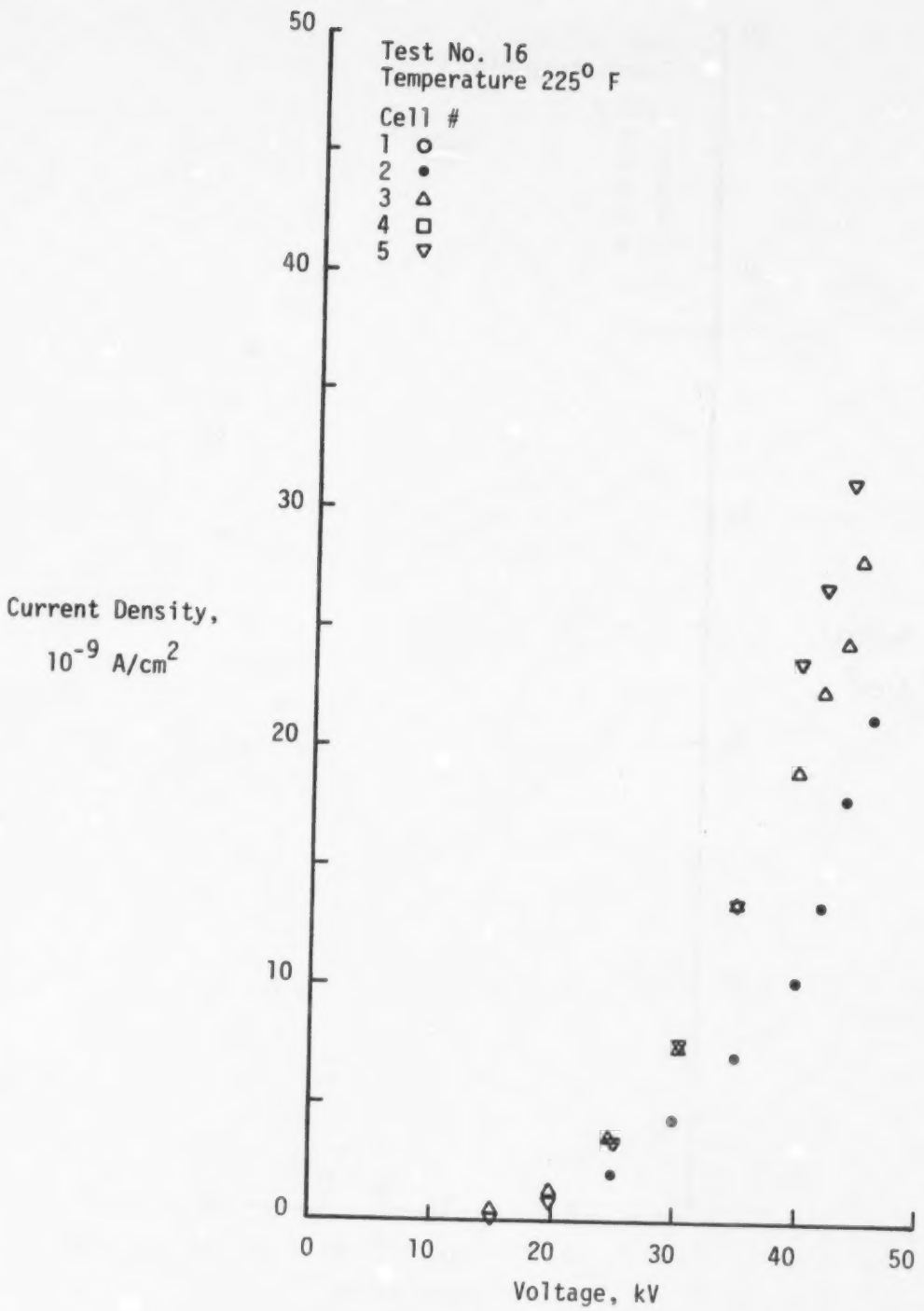

Test No. 11
Temperature 243° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

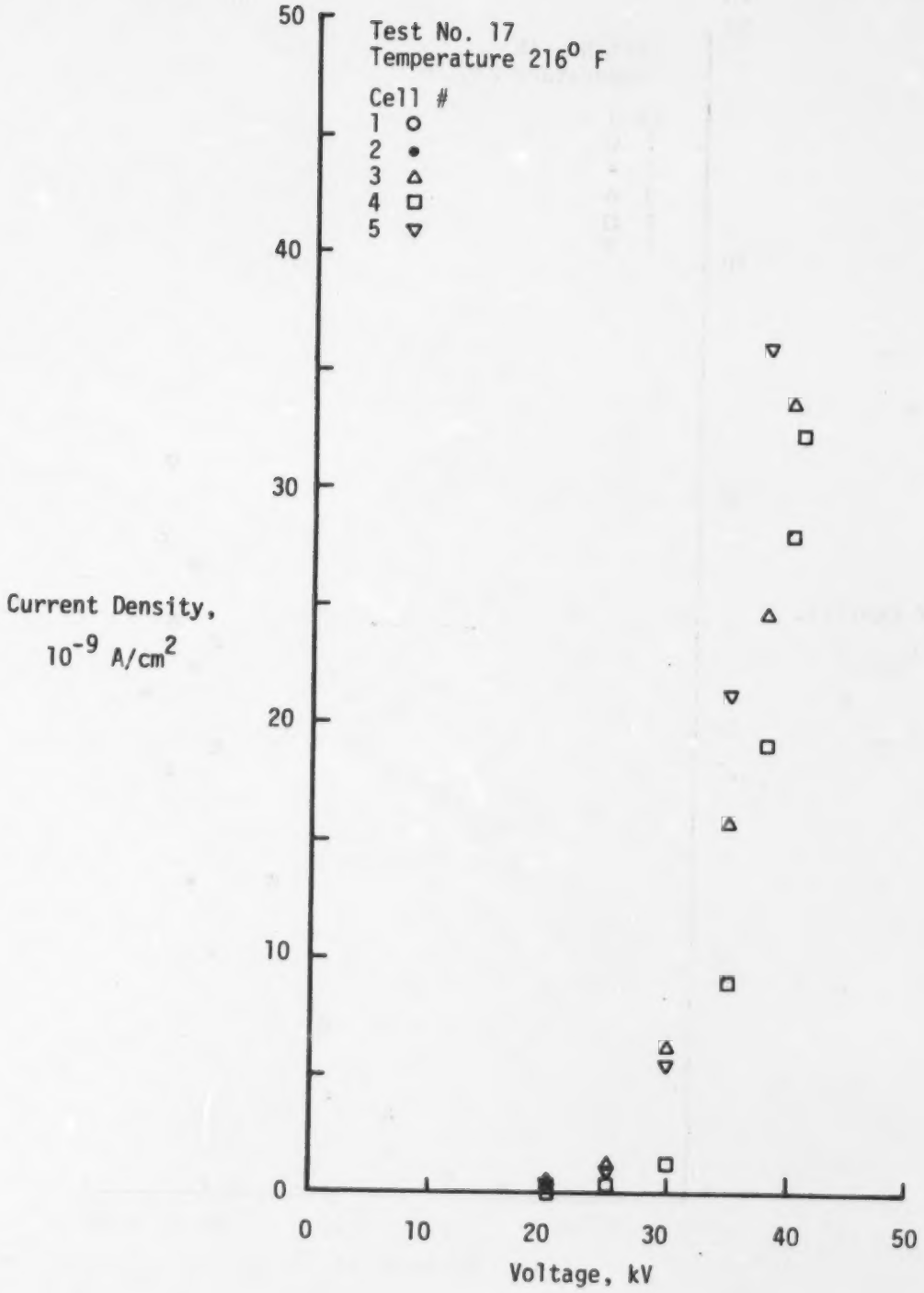

Test No. 12
Temperature 240° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

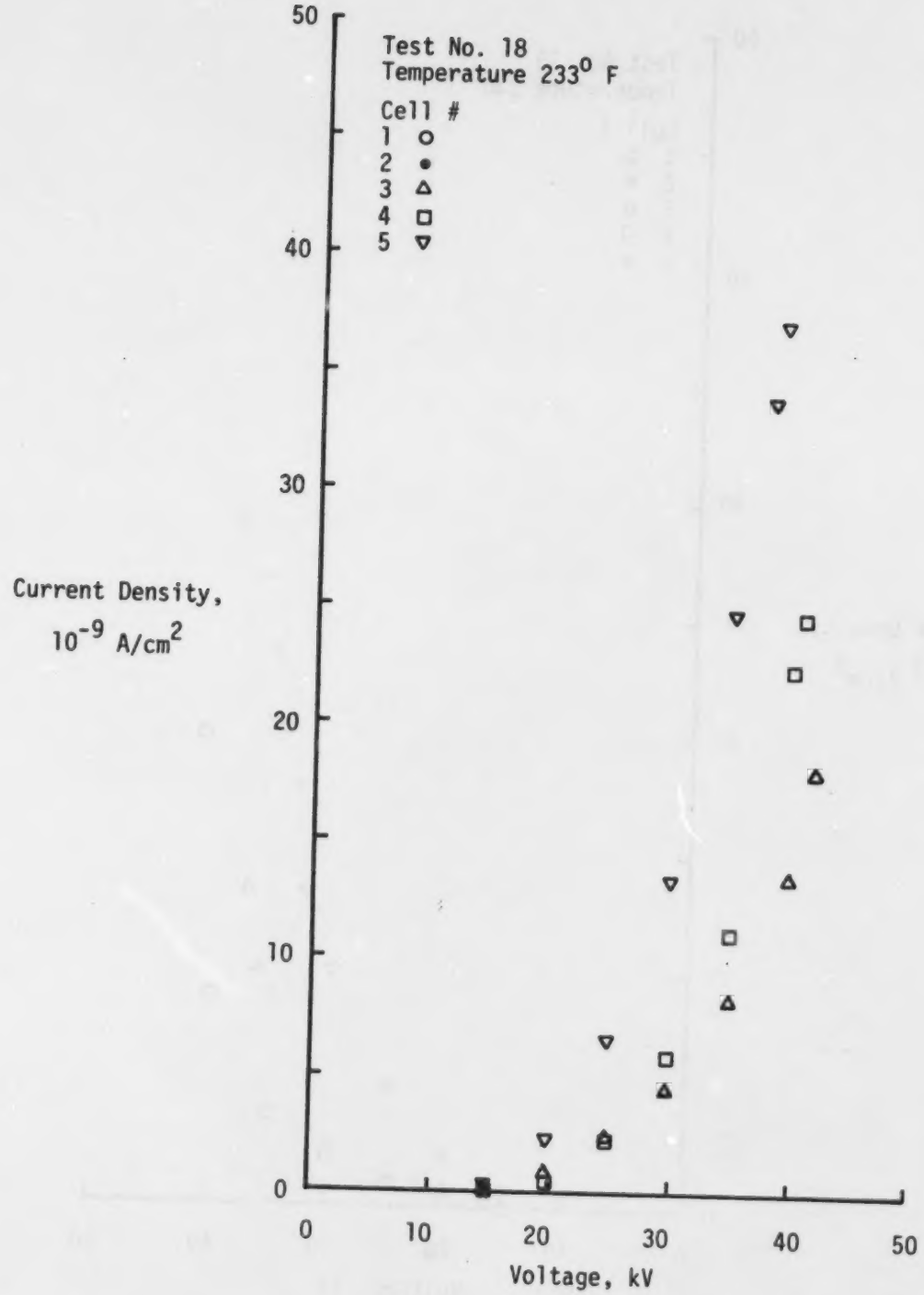

Test No. 13
Temperature 239° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

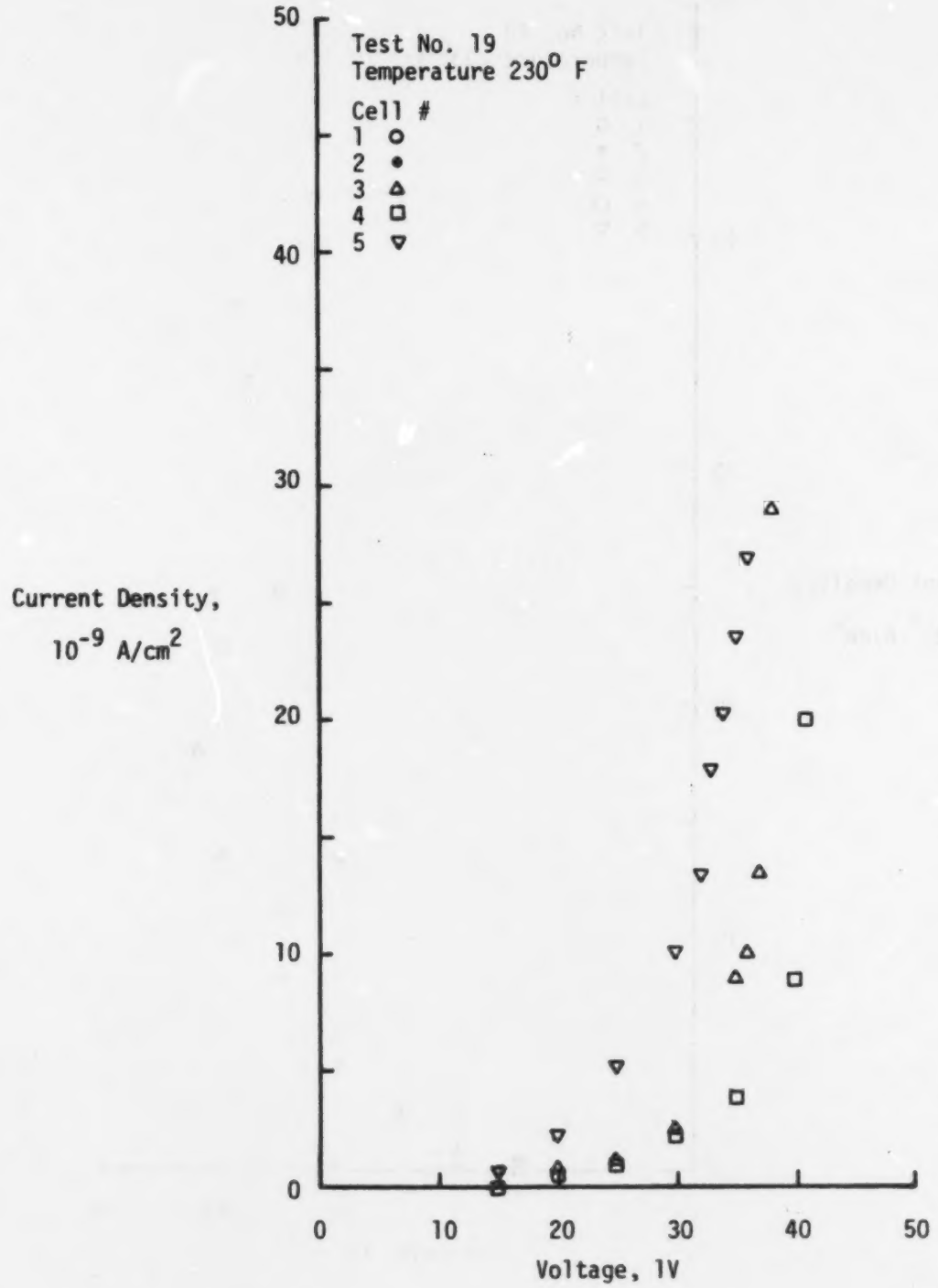

Test No. 14
Temperature 233° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

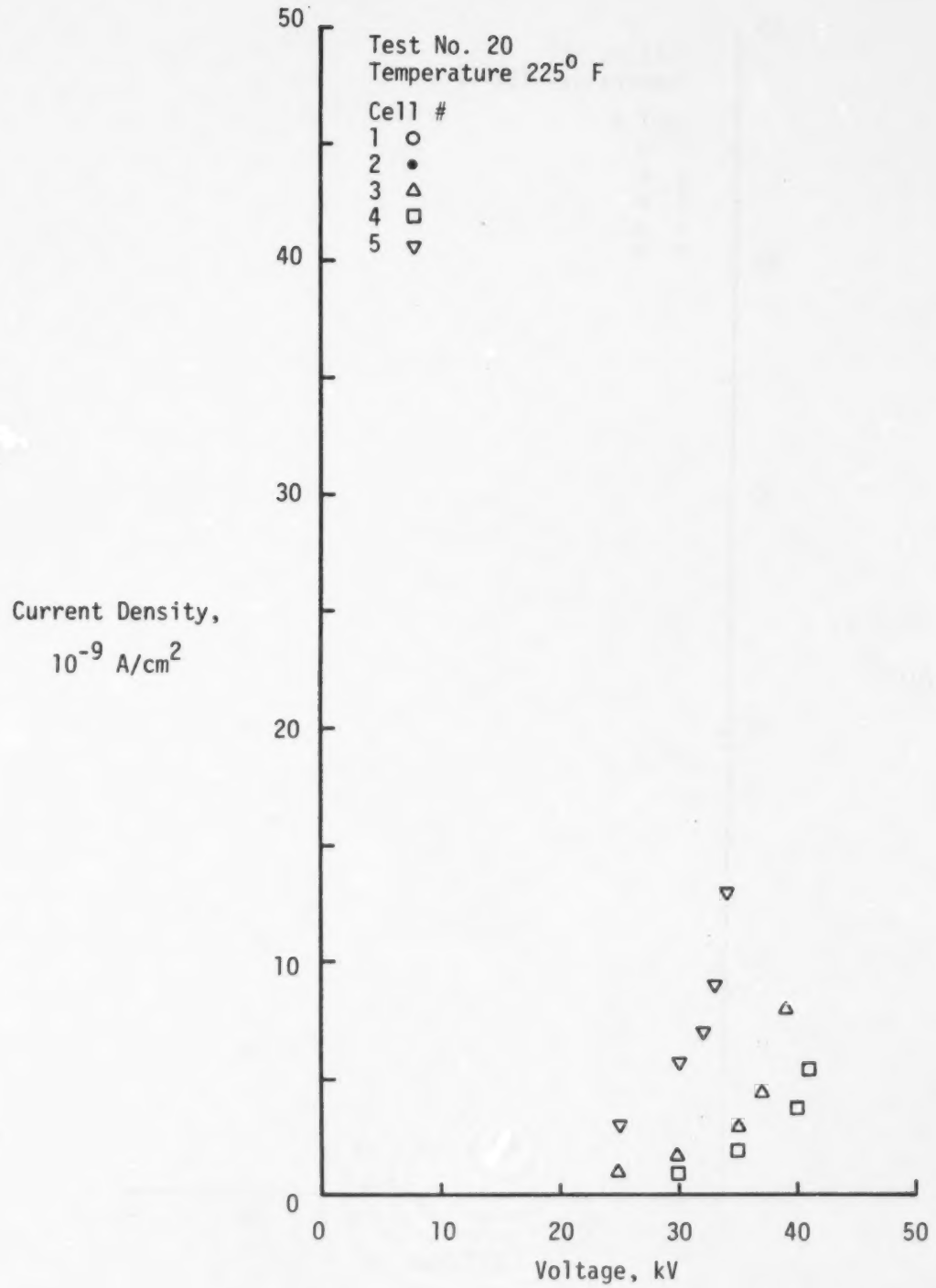

Test No. 15
Temperature 231° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV

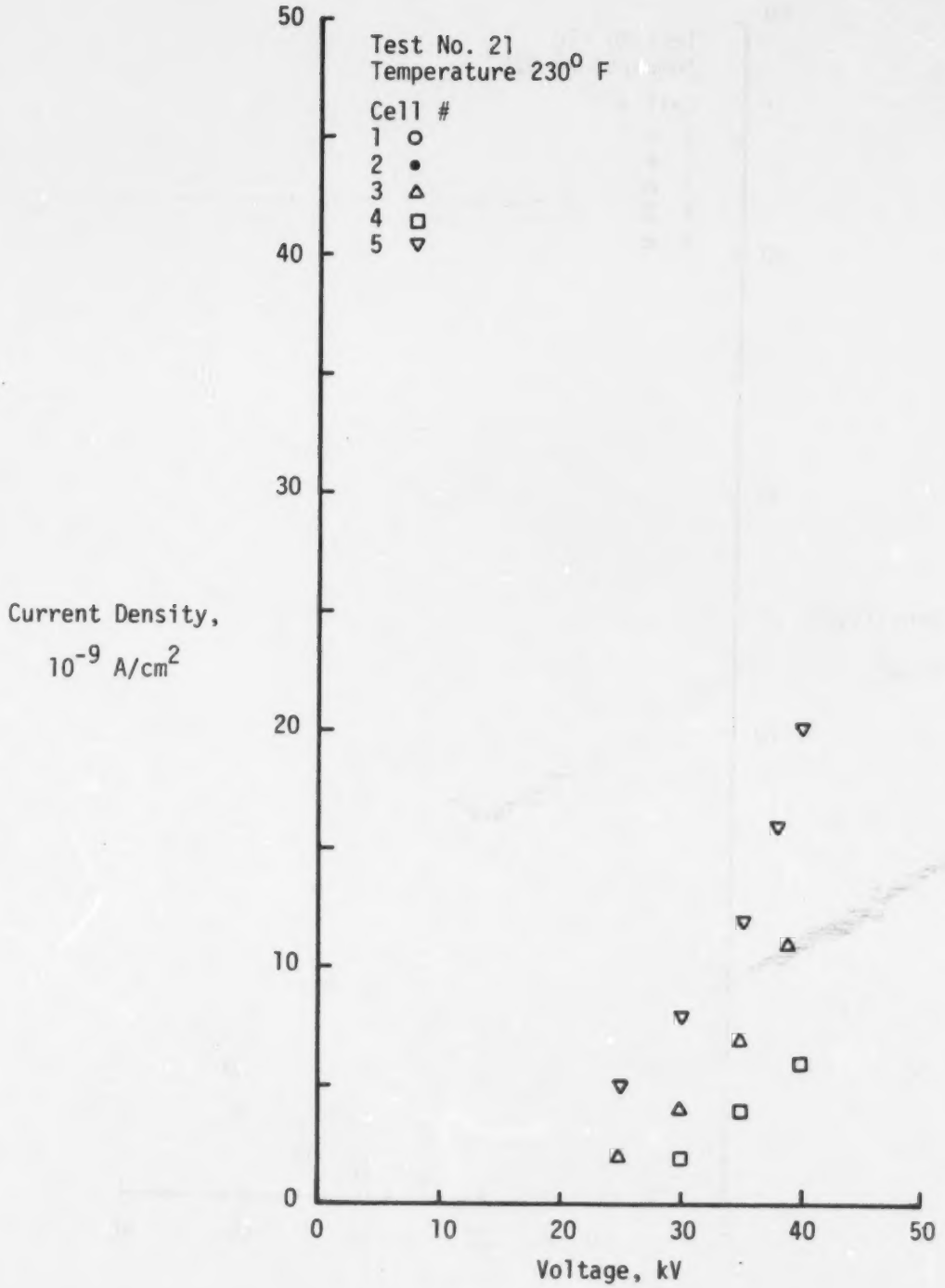

Test No. 16
Temperature 225° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
0
10
20
30
40
50
Voltage, kV


Test No. 17
Temperature 216° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV


Test No. 18
Temperature 233° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV


Test No. 19
Temperature 230° F
Cell #
1
2
3
4
5
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, 1V


Test No. 20
Temperature 225° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV


Test No. 21
Temperature 230° F
Cell #
1 ○
2 ●
3 △
4 □
5 ▽
Current Density,
10⁻⁹ A/cm²
50
40
30
20
10
0
0
10
20
30
40
50
Voltage, kV

APPENDIX B

Impactor Data and Results

RUN 1A DRINK A, INLET OF FSP, 4/27/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.30

CALC. MASS LOADING = 3.9815+00 GR/ACF 5.2225+00 GR/DNCF 7.9670+03 MG/ACM 1.1951+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.20	.75	.55	.32	
MASS (MILLIGRAMS)	49.60	7.85	9.06	2.87	1.09	.55	.29	.14	.00
MG/DNCM/STAGE	9.96+03	6.09+02	9.60+02	6.08+02	2.31+02	1.17+02	5.09+01	2.97+01	0.00
CUM. % OF MASS LESS THAN D50	20.93	16.87	8.69	3.59	1.65	.68	.25	.01	
CUM. (MG/ACM) SMALLER THAN D50	1.67+03	1.26+03	6.91+02	2.86+02	1.32+02	5.41+01	2.02+01	3.98-01	
CUM. (MG/DNCM) SMALLER THAN D50	2.50+03	1.90+03	1.09+03	4.29+02	1.98+02	8.11+01	3.03+01	5.98-01	
CUM. (GR/ACF) SMALLER THAN D50	7.29-01	5.53-01	3.02-01	1.25-01	5.76-02	2.36-02	8.82-03	1.74-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.09+00	8.29-01	4.53-01	1.87-01	8.64-02	3.54-02	1.32-02	2.61-04	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	1.70+04	3.26+03	3.06+03	2.36+03	2.78+03	8.99+02	4.85+02	1.24+02	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	1.04+09	8.22+09	3.47+10	1.92+11	7.31+11	3.91+11	1.07+12	1.24+12	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 1A BRINK A, INLET OF ESP, 4/27/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.30

CALC. MASS LOADING = 1.6982+00 GR/ACF 2.9729+00 GR/DNCF 3.7716+03 MG/ACM 6.6576+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.20	.75	.55	.32	
MASS (MILLIGRAMS)	19.70	2.70	5.19	2.49	1.05	.99	.10	.07	.06
MG/DNCM/STAGE	3.11+03	5.77+02	1.09+03	5.28+02	2.22+02	9.32+01	2.12+01	9.29+00	1.27+01
CUM. % OF MASS LESS THAN D50	99.95	34.89	15.59	6.26	2.33	.68	.30	.23	
CUM. (MG/ACM) SMALLER THAN D50	1.70+03	1.31+03	5.88+02	2.36+02	8.78+01	2.56+01	1.15+01	8.68+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.54+03	1.97+03	8.82+02	3.54+02	1.32+02	3.84+01	1.72+01	1.30+01	
CUM. (GR/ACF) SMALLER THAN D50	7.41-01	5.72-01	2.57-01	1.03-01	3.84-02	1.12-02	5.02-03	3.79-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.11+00	8.61-01	3.85-01	1.55-01	5.75-02	1.68-02	7.53-03	5.68-03	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	4.97+03	3.08+03	3.88+03	2.05+03	2.68+03	3.99+02	1.60+02	1.77+01	4.29+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.51+08	7.79+09	9.90+10	1.66+11	7.05+11	3.13+11	9.45+11	1.77+11	2.73+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 2A DRINK A, INLET OF ESP, 4/28/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.10

CALC. MASS LOADING = 9.9853+00 GR/ACF 6.7781+00 GR/DNCF 1.0269+04 MG/ACM 1.5396+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	46.39	5.99	7.43	5.91	2.86	2.78	.98	.61	.26
MG/DNCM/STAGE	9.83+03	1.15+03	1.57+03	1.25+03	6.06+02	5.89+02	2.08+02	1.29+02	5.51+01
CUM. % OF MASS LESS THAN D50	36.16	28.67	18.95	10.31	6.38	2.55	1.20	.36	
CUM. (MG/ACM) SMALLER THAN D50	3.71+03	2.99+03	1.89+03	1.06+03	6.55+02	2.62+02	1.23+02	3.72+01	
CUM. (MG/DNCM) SMALLER THAN D50	5.69+03	4.91+03	2.99+03	1.69+03	9.82+02	3.93+02	1.85+02	5.59+01	
CUM. (GR/ACF) SMALLER THAN D50	1.62+00	1.29+00	8.27-01	4.63-01	2.86-01	1.14-01	5.39-02	1.63-02	
CUM. (GR/DNCF) SMALLER THAN D50	2.49+00	1.93+00	1.29+00	6.99-01	4.29-01	1.72-01	8.09-02	2.44-02	
GEO. MEAN DIA. (MICROMETERS)	7.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.95-01
DM/DLOGD (MG/DNCM)	1.75+04	5.21+03	5.61+03	4.87+03	7.31+03	2.52+03	1.57+03	5.39+02	1.83+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.11+09	1.57+10	7.09+10	3.95+11	1.92+12	1.98+12	9.36+12	5.39+12	1.18+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 28 BRINK A, INLET OF ESP, 4/28/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 9.3711+00 GR/ACF 6.5568+00 GR/DNCF 1.0003+04 MG/ACM 1.5004+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	50.03	6.60	6.11	3.55	2.23	.66	.60	1.03	.00
MG/DNCM/STAGE	1.06+04	1.40+03	1.29+03	7.52+02	4.73+02	1.40+02	1.27+02	2.18+02	0.00
CUM. % OF MASS LESS THAN D50	29.36	20.03	11.40	6.39	3.24	2.31	1.46	.01	
CUM. (MG/ACM) SMALLER THAN D50	2.94+03	2.00+03	1.14+03	6.39+02	3.24+02	2.31+02	1.46+02	5.00-01	
CUM. (MG/DNCM) SMALLER THAN D50	4.40+03	3.01+03	1.71+03	9.59+02	4.86+02	3.46+02	2.19+02	7.50-01	
CUM. (GR/ACF) SMALLER THAN D50	1.28+00	8.76-01	4.98-01	2.79-01	1.42-01	1.01-01	6.38-02	2.19-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.92+00	1.31+00	7.48-01	4.19-01	2.12-01	1.51-01	9.57-02	3.28-04	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	1.35+04	7.59+03	4.41+03	2.92+03	1.70+03	5.99+02	4.63+02	4.11+02	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	1.19+09	1.90+10	5.83+10	2.37+11	1.50+12	9.69+11	2.67+12	9.11+12	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 3A DRINK A, INLET OF ESP, 4/30/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 8.3389+00 GR/ACF 1.2508+01 GR/DNCF 1.9081+04 MG/ACM 2.8623+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	113.07	9.39	7.98	2.67	3.02	1.74	.00	1.65	.85
MG/DNCM/STAGE	2.98+04	9.30+02	1.69+03	5.66+02	6.40+02	3.69+02	0.00	3.50+02	1.19+02
CUM. % OF MASS LESS THAN D50	16.30	13.05	7.14	5.16	2.93	1.69	1.69	.42	
CUM. (MG/ACM) SMALLER THAN D50	3.11+03	2.49+03	1.36+03	9.86+02	5.59+02	3.13+02	3.13+02	8.01+01	
CUM. (MG/DNCM) SMALLER THAN D50	4.67+03	3.79+03	2.09+03	1.48+03	8.38+02	4.70+02	4.70+02	1.20+02	
CUM. (GR/ACF) SMALLER THAN D50	1.36+00	1.09+00	5.95-01	4.31-01	2.44-01	1.37-01	1.37-01	3.50-02	
CUM. (GR/DNCF) SMALLER THAN D50	2.04+00	1.63+00	8.93-01	6.46-01	3.66-01	2.05-01	2.05-01	5.25-02	
GEO. MEAN DIA. (MICROMETERS)	7.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	3.05+04	5.02+03	6.07+03	7.20+03	7.72+03	1.58+03	0.00	1.46+03	3.94+02
DN/DLOGD (NO. PARTICLES/DNCM)	2.70+09	1.27+10	7.61+10	1.78+11	2.03+12	1.29+12	0.00	1.46+13	2.55+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 38 BRINK B, INLET OF ESP, 4/30/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 230.0 F = 110.0 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 230.0 F = 110.0 C

ASSUMED PARTICLE DENSITY = 2.40 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.30

CALC. MASS LOADING = 2.4513+00 GR/ACF 3.5739+00 GR/DNCF 5.6094+03 MG/ACM 8.1771+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.12	5.30	2.77	1.53	1.27	.74	.55	.31	
MASS (MILLIGRAMS)	23.65	5.30	3.91	5.11	1.19	.00	.70	.00	.00
MG/DNCM/STAGE	4.84+03	1.09+03	8.05+02	1.05+03	2.45+02	0.00	1.44+02	0.00	0.00
CUM. % OF MASS LESS THAN D50	40.81	27.48	17.63	9.76	1.77	1.77	.01	.01	
CUM. (MG/ACM) SMALLER THAN D50	2.29+03	1.54+03	9.89+02	2.67+02	9.92+01	9.92+01	7.80-01	7.80-01	
CUM. (MG/DNCM) SMALLER THAN D50	3.34+03	2.25+03	1.44+03	3.90+02	1.45+02	1.45+02	1.09-01	1.09-01	
CUM. (GR/ACF) SMALLER THAN D50	1.00+00	6.74-01	4.32-01	1.17-01	4.33-02	4.33-02	1.23-04	1.23-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.46+00	9.87-01	6.30-01	1.70-01	6.32-02	6.32-02	1.79-04	1.79-04	
GEO. MEAN DIA. (MICROMETERS)	2.01+01	6.56+00	3.83+00	2.06+00	1.39+00	9.69-01	6.36-01	4.15-01	2.92-01
DM/DLOGD (MG/DNCM)	6.13+03	5.98+03	2.87+03	9.09+03	2.45+03	0.00	1.09+03	0.00	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	5.51+08	1.53+10	3.79+10	3.42+11	8.01+11	0.00	3.12+12	0.00	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 4A BRINK B, INLET OF ESP, 7/14/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 220.0 F = 104.4 C SAMPLING DURATION = 4.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 220.0 F = 104.4 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.7351+00 GR/ACF 2.4927+00 GR/DNCF 3.9705+03 MG/ACM 5.7041+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.08	5.27	2.76	1.53	1.76	.74	.54	.31	
MASS (MILLIGRAMS)	29.57	3.06	2.12	2.74	.79	.40	.00	.00	.05
MG/DNCM/STAGE	9.16+03	5.17+02	3.59+02	9.63+02	1.34+02	6.76+01	0.00	0.00	8.46+00
CUM. % OF MASS LESS THAN D50	27.16	18.09	11.80	3.68	1.34	.15	.15	.15	
CUM. (MG/ACM) SMALLER THAN D50	1.08+03	7.18+02	4.69+02	1.46+02	5.32+01	6.08+00	6.08+00	6.08+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.55+03	1.03+03	6.73+02	2.10+02	7.64+01	8.74+00	8.74+00	8.74+00	
CUM. (GR/ACF) SMALLER THAN D50	4.71-01	3.14-01	2.05-01	6.39-02	2.32-02	2.66-03	2.66-03	2.66-03	
CUM. (GR/DNCF) SMALLER THAN D50	6.77-01	4.51-01	2.94-01	9.18-02	3.34-02	3.82-03	3.82-03	3.82-03	
GEO. MEAN DIA. (MICROMETERS)	2.01+01	6.57+00	3.81+00	2.05+00	1.39+00	9.63-01	6.32-01	4.12-01	2.91-01
DM/DLOGD (MG/DNCM)	5.75+03	2.79+03	1.28+03	1.80+03	1.61+03	7.90+02	0.00	0.00	2.81+01
DN/DLOGD (NO. PARTICLES/DNCM)	4.75+08	7.38+09	1.69+10	1.53+11	4.43+11	2.38+11	0.00	0.00	1.90+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 48 BRINK A, INLET OF ESP, 7/19/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.40 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .00 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.2716+00 GR/ACF 3.9076+00 GR/DNCF 5.1983+03 MG/ACM 7.7977+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.65	1.28	.78	.55	.32	
MASS (MILLIGRAMS)	97.39	2.28	3.30	1.66	.88	.00	.00	1.14	.22
MG/DNCM/STAGE	5.79+03	4.83+02	6.99+02	3.52+02	1.86+02	0.00	0.00	2.42+02	4.66+01
CUM. % OF MASS LESS THAN D50	75.77	19.57	10.60	6.09	3.70	3.70	3.70	.60	
CUM. (MG/ACM) SMALLER THAN D50	1.34+03	1.07+03	5.51+02	3.17+02	1.92+02	1.92+02	1.92+02	3.13+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.91+03	1.53+03	8.27+02	4.75+02	2.89+02	2.89+02	2.89+02	4.70+01	
CUM. (GR/ACF) SMALLER THAN D50	5.85-01	4.95-01	2.41-01	1.38-01	8.41-02	8.41-02	8.41-02	1.37-02	
CUM. (GR/DNCF) SMALLER THAN D50	8.78-01	6.67-01	3.61-01	2.08-01	1.26-01	1.26-01	1.26-01	2.05-02	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.92-01	4.19-01	2.95-01
DM/DLOGD (MG/DNCM)	7.37+03	2.60+03	2.99+03	1.37+03	2.25+03	0.00	0.00	1.01+03	1.55+02
DN/DLOGD (NO. PARTICLES/DNCM)	6.57+08	6.58+09	3.15+10	1.11+11	5.91+11	0.00	0.00	1.01+13	1.00+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 5A BRINK A, INLET OF ESP, 7/15/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.30

CALC. MASS LOADING = 9.1698+00 GR/ACF 6.7550+00 GR/DNCF 9.5420+03 MG/ACM 1.4317+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	4.35	2.80	1.68	1.28	.78	.65	.32	
MASS (MILLIGRAMS)	51.18	9.19	6.89	3.17	1.21	.50	.22	.30	.00
MG/DNCM/STAGE	1.08+04	8.75+02	1.45+03	6.72+02	2.56+02	1.06+02	4.66+01	6.36+01	0.00
CUM. % OF MASS LESS THAN D50	79.24	18.12	8.00	3.31	1.51	.77	.45	.01	
CUM. (MG/ACM) SMALLER THAN D50	2.31+03	1.73+03	7.63+02	3.15+02	1.45+02	7.39+01	4.29+01	4.77-01	
CUM. (MG/DNCM) SMALLER THAN D50	3.47+03	2.59+03	1.14+03	4.73+02	2.17+02	1.11+02	6.43+01	7.16-01	
CUM. (GR/ACF) SMALLER THAN D50	1.01+00	7.56-01	3.34-01	1.38-01	6.32-02	3.23-02	1.87-02	2.08-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.52+00	1.13+00	5.00-01	2.07-01	9.48-02	4.85-02	2.81-02	3.13-04	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.75-01
DM/DLOGD (MG/DNCM)	1.38+04	4.72+03	5.16+03	2.61+03	3.09+03	4.54+02	3.53+02	2.65+02	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	1.27+09	1.19+10	6.52+10	2.12+11	8.12+11	3.56+11	9.78+11	2.65+12	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 58 DRINK A, INLET OF ESP, 7/15/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.40 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 7.30

CALC. MASS LOADING = 7.1025+00 GR/ACF 3.1539+00 GR/DNCF 4.8113+03 MG/ACM 7.2171+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.40	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	29.41	1.87	3.99	2.17	1.09	.38	.09	.06	.00
MG/DNCM/STAGE	5.17+03	3.96+02	8.45+02	4.60+02	2.31+02	8.05+01	1.91+01	1.27+01	0.00
CUM. % OF MASS LESS THAN D50	78.34	22.85	11.13	4.76	1.56	.95	.18	.01	
CUM. (MG/ACM) SMALLER THAN D50	1.36+03	1.10+03	5.36+02	2.29+02	7.51+01	2.19+01	8.72+00	2.91-01	
CUM. (MG/DNCM) SMALLER THAN D50	2.05+03	1.65+03	8.03+02	3.44+02	1.13+02	3.21+01	1.31+01	3.61-01	
CUM. (GR/ACF) SMALLER THAN D50	5.96-01	4.80-01	2.34-01	1.00-01	3.28-02	9.34-03	3.81-03	1.05-04	
CUM. (GR/DNCF) SMALLER THAN D50	8.94-01	7.21-01	3.51-01	1.50-01	4.92-02	1.40-02	5.71-03	1.58-04	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.95-01
DM/DLOGD (MG/DNCM)	6.59+03	2.19+03	3.01+03	1.79+03	2.78+03	3.95+02	1.49+02	5.31+01	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	5.83+08	6.90+09	3.91+10	1.95+11	7.31+11	2.70+11	9.00+11	5.31+11	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

I RUN 6A BRINK A, INLET OF ESP, 7/18/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 290.0 F = 143.3 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 290.0 F = 143.3 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 5.5389+00 GR/ACF 8.7763+00 GR/DNCF 1.2674+04 MG/ACM 2.0083+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.37	5.96	2.84	1.58	1.31	.76	.56	.92	
MASS (MILLIGRAMS)	62.37	84.42	10.63	9.92	1.88	.91	.31	.00	.08
MG/DNCM/STAGE	1.90+04	1.93+03	2.38+03	1.10+03	4.21+02	2.09+02	4.99+01	0.00	1.79+01
CUM. % OF MASS LESS THAN D50	30.99	20.88	9.03	3.55	1.45	.44	.09	.09	
CUM. (MG/ACM) SMALLER THAN D50	3.86+03	2.65+03	1.14+03	4.50+02	1.84+02	5.57+01	1.19+01	1.19+01	
CUM. (MG/DNCM) SMALLER THAN D50	6.12+03	4.19+03	1.81+03	7.13+02	2.92+02	8.83+01	1.89+01	1.89+01	
CUM. (GR/ACF) SMALLER THAN D50	1.69+00	1.16+00	5.00-01	1.97-01	8.05-02	2.44-02	5.22-03	5.22-03	
CUM. (GR/DNCF) SMALLER THAN D50	2.68+00	1.83+00	7.93-01	3.12-01	1.28-01	3.86-02	8.26-03	8.26-03	
GEO. MEAN DIA. (MICROMETERS)	2.05+01	6.76+00	3.95+00	2.13+00	1.44+00	9.98-01	6.55-01	4.27-01	2.29-01
DM/DLOGD (MG/DNCM)	1.80+04	1.04+04	8.47+03	4.28+03	5.07+03	8.72+02	5.26+02	0.00	5.95+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.54+09	2.98+10	1.01+11	3.27+11	1.26+12	4.44+11	1.37+12	0.00	3.63+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 68 BRINK B. INLET OF ESP, 7/18/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 290.0 F = 143.3 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 290.0 F = 143.3 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 5.0353+00 GR/ACF 7.9791+00 GR/DNCF 1.1522+04 MG/ACM 1.8259+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.37	5.96	2.86	1.58	1.31	.76	.56	.92	
MASS (MILLIGRAMS)	62.38	9.98	7.88	3.82	1.92	.95	.00	.00	.14
MG/DNCM/STAGE	1.90+04	1.11+03	1.76+03	8.55+02	3.18+02	2.13+02	0.00	0.00	3.13+01
CUM. % OF MASS LESS THAN D50	23.53	17.93	7.77	3.08	1.34	.18	.18	.18	
CUM. (MG/ACM) SMALLER THAN D50	2.71+03	2.01+03	8.95+02	3.55+02	1.55+02	2.09+01	2.09+01	2.09+01	
CUM. (MG/DNCM) SMALLER THAN D50	4.30+03	3.18+03	1.42+03	5.63+02	2.45+02	3.23+01	3.23+01	3.23+01	
CUM. (GR/ACF) SMALLER THAN D50	1.18+00	8.77-01	3.91-01	1.55-01	6.75-02	8.89-03	8.89-03	8.89-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.88+00	1.39+00	6.20-01	2.46-01	1.07-01	1.41-02	1.41-02	1.41-02	
GEO. MEAN DIA. (MICROMETERS)	2.05+01	6.76+00	3.95+00	2.13+00	1.44+00	9.98-01	6.55-01	4.27-01	2.29-01
DM/DLOGD (MG/DNCM)	1.80+04	6.01+03	6.28+03	3.32+03	3.83+03	9.11+02	0.00	0.00	1.04+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.54+09	1.93+10	7.98+10	2.54+11	9.99+11	6.77+11	0.00	0.00	4.35+19

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 7A BRINK A: INLET OF ESP, 7/19/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.6013+00 GR/ACF 2.9697+00 GR/DNCF 3.6697+03 MG/ACM 5.6515+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.29	5.91	2.83	1.57	1.29	.76	.56	.32	
MASS (MILLIGRAMS)	12.90	3.14	8.30	2.87	.87	.49	.22	.30	.55
MG/DNCM/STAGE	2.70+03	6.84+02	1.15+03	6.25+02	1.90+02	1.07+02	9.79+01	6.59+01	7.63+01
CUM. % OF MASS LESS THAN D50	52.20	40.10	19.67	8.60	5.25	3.36	2.51	1.35	
CUM. (MG/ACM) SMALLER THAN D50	1.91+03	1.47+03	7.21+02	3.15+02	1.92+02	1.23+02	9.20+01	4.96+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.95+03	2.27+03	1.11+03	4.86+02	2.97+02	1.90+02	1.42+02	7.65+01	
CUM. (GR/ACF) SMALLER THAN D50	8.36+01	6.42-01	3.15-01	1.38-01	8.40-02	5.38-02	4.02-02	2.17-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.29+00	9.90-01	4.86-01	2.12-01	1.30-01	8.30-02	6.20-02	3.34-02	
GEO. MEAN DIA. (MICROMETERS)	2.04+01	6.69+00	3.91+00	2.11+00	1.42+00	9.89-01	6.99-01	4.23-01	2.27-01
DM/DLOGD (MG/DNCM)	3.96+03	3.69+03	9.11+03	7.43+03	2.27+03	4.57+02	3.43+02	2.73+02	7.53+02
DN/DLOGD (NO. PARTICLES/DNCM)	3.01+08	9.09+09	5.09+10	1.91+11	5.83+11	3.48+11	9.76+11	2.65+12	1.59+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 78 BRINK B, INLET OF ESP, 7/19/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.5087+00 GR/ACF 2.3269+00 GR/DNCF 3.4524+03 MG/ACM 5.3247+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.29	5.91	2.83	1.57	1.29	.76	.56	.32	
MASS (MILLIGRAMS)	11.80	3.27	5.49	2.40	.96	.06	.00	.00	.06
MG/DNCM/STAGE	2.57+03	7.12+02	1.28+03	5.23+02	2.09+02	1.31+01	0.00	0.00	1.31+01
CUM. % OF MASS LESS THAN D50	51.72	38.34	14.29	9.42	.50	.25	.25	.25	
CUM. (MG/ACM) SMALLER THAN D50	1.78+03	1.32+03	4.92+02	1.53+02	1.71+01	8.65+00	8.65+00	8.65+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.75+03	2.04+03	7.58+02	2.36+02	2.64+01	1.33+01	1.33+01	1.33+01	
CUM. (GR/ACF) SMALLER THAN D50	7.80-01	5.78-01	2.15-01	6.67-02	7.48-03	3.78-03	3.78-03	3.78-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.20+00	8.92-01	3.31-01	1.03-01	1.15-02	5.83-03	5.83-03	5.83-03	
GEO. MEAN DIA. (MICROMETERS)	2.04+01	6.69+00	3.91+00	2.11+00	1.42+00	9.89-01	6.99-01	4.23-01	2.27-01
DM/DLOGD (MG/DNCM)	3.29+03	3.84+03	9.57+03	7.03+03	2.52+03	5.60+01	0.00	0.00	4.34+01
DN/DLOGD (NO. PARTICLES/DNCM)	2.87+08	9.91+09	5.61+10	1.60+11	6.93+11	9.26+10	0.00	0.00	2.73+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 8A BRINK A. INLET OF ESP, 7/20/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 276.0 F = 135.6 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 276.0 F = 135.6 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 3.8211+00 GR/ACF 5.9919+00 GR/DNCF 8.7933+03 MG/ACM 1.3697+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.31	5.92	2.89	1.57	1.30	.76	.56	.32	
MASS (MILLIGRAMS)	93.79	3.01	5.62	3.78	2.78	1.83	.29	.90	.40
MG/DNCM/STAGE	9.51+03	6.61+02	1.23+03	8.30+02	6.11+02	4.02+02	6.37+01	1.98+02	8.79+01
CUM. % OF MASS LESS THAN D50	30.07	25.21	16.13	10.02	5.53	2.57	2.11	.65	
CUM. (MG/ACM) SMALLER THAN D50	2.63+03	2.20+03	1.41+03	8.76+02	4.84+02	2.25+02	1.84+02	5.69+01	
CUM. (MG/DNCM) SMALLER THAN D50	4.09+03	3.43+03	2.19+03	1.36+03	7.52+02	3.50+02	2.86+02	8.85+01	
CUM. (GR/ACF) SMALLER THAN D50	1.15+00	9.63-01	6.16-01	3.83-01	2.11-01	9.83-02	8.04-02	2.49-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.79+00	1.50+00	9.58-01	5.95-01	3.29-01	1.53-01	1.25-01	3.87-02	
GEO. MEAN DIA. (MICROMETERS)	2.04+01	6.71+00	3.92+00	2.11+00	1.93+00	9.91-01	4.51-01	9.29-01	9.98-01
DM/DLOGD (MG/DNCM)	1.22+04	3.56+03	9.40+03	3.23+03	7.34+03	1.72+03	9.82+02	8.25+02	2.92+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.06+09	8.66+09	5.35+10	2.52+11	1.86+12	1.30+12	1.29+12	7.99+12	1.82+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 8B BRINK B, INLET OF ESP, 7/20/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 3.9155+00 GR/ACF 6.0390+00 GR/DNCF 8.9600+03 MG/ACM 1.3819+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.29	5.91	2.83	1.57	1.29	.76	.54	.32	
MASS (MILLIGRAMS)	44.94	4.20	8.25	3.60	1.50	1.10	.18	.19	.02
MG/DNCM/STAGE	9.68+03	9.15+02	1.80+03	7.84+02	3.27+02	2.40+02	3.92+01	3.05+01	4.36+00
CUM. % OF MASS LESS THAN D50	29.94	23.32	10.32	4.64	2.28	.54	.24	.09	
CUM. (MG/ACM) SMALLER THAN D50	2.68+03	2.09+03	9.24+02	4.16+02	2.04+02	4.85+01	2.30+01	3.27+00	
CUM. (MG/DNCM) SMALLER THAN D50	4.14+03	3.22+03	1.43+03	6.41+02	3.14+02	7.48+01	3.55+01	5.05+00	
CUM. (GR/ACF) SMALLER THAN D50	1.17+00	9.13-01	4.04-01	1.82-01	8.91-02	2.12-02	1.01-02	1.43-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.81+00	1.41+00	6.23-01	2.80-01	1.37-01	3.27-02	1.55-02	2.21-03	
GEO. MEAN DIA. (MICROMETERS)	2.04+01	6.69+00	3.91+00	2.11+00	1.42+00	9.89-01	6.49-01	4.23-01	2.27-01
DN/DLOGD (MG/DNCM)	1.24+04	4.93+03	6.40+03	3.05+03	3.94+03	1.03+03	2.97+02	1.27+02	1.44+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.08+09	1.21+10	7.85+10	2.90+11	1.00+12	7.80+11	7.98+11	1.29+12	1.85+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 9A BRINK IMPACTOR A, INLET OF ESP, 7/21/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 260.0 F = 126.7 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 260.0 F = 126.7 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.6186+00 GR/ACF 2.4821+00 GR/DNCF 3.7038+03 MG/ACM 5.6792+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.24	5.38	2.82	1.56	1.29	.75	.55	.22	
MASS (MILLIGRAMS)	16.04	1.60	3.19	2.79	1.16	.56	.22	.98	.13
MG/DNCM/STAGE	3.95+03	3.99+02	6.85+02	5.89+02	2.99+02	1.20+02	9.73+01	1.25+02	2.79+01
CUM. % OF MASS LESS THAN D50	38.83	32.73	20.56	10.11	5.69	3.55	2.71	.50	
CUM. (MG/ACM) SMALLER THAN D50	1.44+03	1.21+03	7.62+02	3.75+02	2.11+02	1.32+02	1.00+02	1.85+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.19+03	1.84+03	1.16+03	5.70+02	3.20+02	2.00+02	1.53+02	2.82+01	
CUM. (GR/ACF) SMALLER THAN D50	6.28-01	5.30-01	3.33-01	1.64-01	9.21-02	5.75-02	4.39-02	8.11-03	
CUM. (GR/DNCF) SMALLER THAN D50	9.56-01	8.06-01	5.06-01	2.49-01	1.40-01	8.75-02	6.68-02	1.23-02	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.66+00	3.89+00	2.10+00	1.42+00	9.84-01	6.96-01	4.21-01	2.26-01
DM/DLOGD (MG/DNCM)	9.90+03	1.85+03	2.94+03	2.29+03	3.01+03	5.15+02	3.58+02	5.20+02	9.28+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.84+08	9.61+09	3.09+10	1.83+11	7.78+11	3.98+11	9.77+11	5.12+12	5.91+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

I RUN 9R BRINK IMPACTOR B, INLET OF ESP, 7/21/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.9 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .40 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.0772+00 GR/ACF 1.6619+00 GR/DNCF 2.4650+03 MG/ACM 3.8018+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.29	5.91	2.83	1.57	1.29	.76	.56	.82	
MASS (MILLIGRAMS)	11.26	.13	2.77	1.86	.82	.59	.00	.00	.02
MG/DNCM/STAGE	2.95+03	2.83+01	6.03+02	4.05+02	1.79+02	1.29+02	0.00	0.00	4.36+00
CUM. % OF MASS LESS THAN D50	35.98	34.73	18.86	8.20	3.50	.12	.12	.12	
CUM. (MG/ACM) SMALLER THAN D50	8.75+02	8.56+02	4.65+02	2.02+02	8.63+01	2.95+00	2.95+00	2.95+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.35+03	1.32+03	7.17+02	3.12+02	1.33+02	4.56+00	4.56+00	4.56+00	
CUM. (GR/ACF) SMALLER THAN D50	3.82-01	3.74-01	2.03-01	8.83-02	3.77-02	1.29-03	1.29-03	1.29-03	
CUM. (GR/DNCF) SMALLER THAN D50	5.89-01	5.77-01	3.13-01	1.36-01	5.82-02	1.99-03	1.99-03	1.99-03	
GEO. MEAN DIA. (MICROMETERS)	2.94+01	6.69+00	3.91+00	2.11+00	1.42+00	9.89-01	6.49-01	4.23-01	2.27+01
DM/DLOGD (MG/DNCM)	3.14+03	1.53+02	2.15+03	1.57+03	2.15+03	5.50+02	0.00	0.00	1.45+01
DN/DLOGD (NO. PARTICLES/DNCM)	2.74+08	3.74+08	2.64+10	1.24+11	5.49+11	4.19+11	0.00	0.00	9.09+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 10A BRINK IMPACTOR A, INLET OF ESP, 7/22/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.6303+00 GR/ACF 2.9955+00 GR/DNCF 3.7306+03 MG/ACM 5.5041+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	16.83	1.75	2.54	1.70	1.33	.37	.35	1.03	.41
MG/DNCM/STAGE	3.57+03	3.71+02	5.38+02	3.60+02	2.82+02	7.84+01	7.42+01	2.18+02	1.08+02
CUM. % OF MASS LESS THAN D50	36.28	29.65	20.04	13.60	8.56	7.16	5.84	1.94	
CUM. (MG/ACM) SMALLER THAN D50	1.35+03	1.11+03	7.47+02	5.07+02	3.19+02	2.67+02	2.18+02	7.22+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.03+03	1.66+03	1.12+03	7.61+02	4.79+02	4.01+02	3.27+02	1.08+02	
CUM. (GR/ACF) SMALLER THAN D50	5.91-01	4.83-01	3.27-01	2.22-01	1.40-01	1.17-01	9.51-02	3.16-02	
CUM. (GR/DNCF) SMALLER THAN D50	8.87-01	7.25-01	4.90-01	3.33-01	2.09-01	1.75-01	1.43-01	4.73-02	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.91+00	9.79-01	6.92-01	4.29-01	2.75-01
DM/DLOGD (MG/DNCM)	4.54+03	2.00+03	1.92+03	1.40+03	3.40+03	3.36+02	5.62+02	9.11+02	3.59+02
DN/DLOGD (NO. PARTICLES/DNCM)	4.07+08	5.05+09	2.42+10	1.14+11	8.93+11	2.63+11	1.56+12	9.11+12	7.32+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 108 BRINK IMPACTOR B, INLET OF ESP, 7/22/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.1581+00 GR/ACF 3.2372+00 GR/DNCF 4.9384+03 MG/ACM 7.4078+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	25.57	1.91	3.09	1.73	.87	.90	.97	.00	.02
MG/DNCM/STAGE	5.42+03	4.05+02	6.55+02	3.67+02	1.84+02	1.91+02	9.96+01	0.00	8.90+01
CUM. % OF MASS LESS THAN D50	26.84	21.90	12.56	7.61	5.13	2.56	1.21	1.21	
CUM. (MG/ACM) SMALLER THAN D50	1.33+03	1.06+03	6.20+02	3.76+02	2.53+02	1.26+02	5.96+01	5.96+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.99+03	1.59+03	9.31+02	5.64+02	3.80+02	1.89+02	8.94+01	8.94+01	
CUM. (GR/ACF) SMALLER THAN D50	5.80-01	4.62-01	2.71-01	1.64-01	1.11-01	5.50-02	2.60-02	2.60-02	
CUM. (GR/DNCF) SMALLER THAN D50	8.70-01	6.93-01	4.07-01	2.46-01	1.66-01	8.24-02	3.91-02	3.91-02	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	6.90+03	2.18+03	2.33+03	1.42+03	2.22+03	8.17+02	7.54+02	0.00	2.96+02
DN/DLOGD (NO. PARTICLES/DNCM)	6.10+08	5.51+09	2.95+10	1.16+11	5.84+11	4.90+11	2.09+12	0.00	1.91+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 11A BRINK IMPACTOR A INLET OF ESP. 7/29/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 240.0 F = 115.6 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 240.0 F = 115.6 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.2309+00 GR/ACF 3.2993+00 GR/DNCF 5.1051+03 MG/ACM 7.5499+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.16	5.32	2.99	1.59	1.27	.79	.55	.32	
MASS (MILLIGRAMS)	24.73	1.82	3.66	2.38	1.97	.77	.78	.06	.80
MG/DNCM/STAGE	5.17+03	3.80+02	7.65+02	4.91+02	3.07+02	1.61+02	1.63+02	1.25+01	1.09+02
CUM. % OF MASS LESS THAN D50	31.58	26.59	16.91	9.91	5.89	3.71	1.55	1.39	
CUM. (MG/ACM) SMALLER THAN D50	1.61+03	1.35+03	8.38+02	5.06+02	2.98+02	1.90+02	7.94+01	7.09+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.38+03	2.00+03	1.24+03	7.48+02	4.41+02	2.80+02	1.17+02	1.05+02	
CUM. (GR/ACF) SMALLER THAN D50	7.04-01	5.92-01	3.66-01	2.21-01	1.30-01	8.28-02	3.47-02	3.10-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.04+00	8.74-01	5.42-01	3.27-01	1.93-01	1.22-01	5.13-02	4.58-02	
GEO. MEAN DIA. (MICROMETERS)	2.02+01	6.59+00	3.85+00	2.07+00	1.40+00	9.74-01	6.39-01	4.17-01	2.29-01
DM/DLOGD (MG/DNCM)	6.56+03	2.05+03	2.72+03	1.91+03	3.70+03	6.89+02	1.23+03	5.23+01	3.47+02
DN/DLOGD (NO. PARTICLES/DNCM)	5.85+08	5.26+09	3.50+10	1.87+11	9.88+11	5.48+11	3.47+12	5.31+11	7.28+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 118 BRINK IMPACTOR A INLET OF ESP, 7/25/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 240.0 F = 115.6 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 240.0 F = 115.6 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 79.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.2216+00 GR/ACF 3.2856+00 GR/DNCF 5.0839+03 MG/ACM 7.5184+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.16	5.32	2.79	1.59	1.27	.74	.55	.32	
MASS (MILLIGRAMS)	24.96	2.20	4.19	2.45	1.25	.19	.31	.00	.59
MG/DNCM/STAGE	5.21+03	4.60+02	8.65+02	5.12+02	2.61+02	3.92+01	6.48+01	0.00	1.13+02
CUM. % OF MASS LESS THAN D50	30.65	24.54	13.09	6.23	2.76	2.37	1.51	1.51	
CUM. (MG/ACM) SMALLER THAN D50	1.56+03	1.25+03	6.63+02	3.17+02	1.40+02	1.20+02	7.65+01	7.65+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.30+03	1.85+03	9.80+02	4.68+02	2.07+02	1.78+02	1.13+02	1.13+02	
CUM. (GR/ACF) SMALLER THAN D50	6.81-01	5.45-01	2.90-01	1.38-01	6.12-02	5.26-02	3.34-02	3.34-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.01+00	8.06-01	4.28-01	2.05-01	9.05-02	7.78-02	4.95-02	4.95-02	
GEO. MEAN DIA. (MICROMETERS)	2.02+01	6.59+00	3.45+00	2.07+00	1.40+00	9.74-01	6.39-01	4.17-01	2.99-01
DM/DLOGD (MG/DNCM)	6.67+03	2.48+03	3.08+03	1.99+03	3.15+03	1.25+02	4.90+02	0.00	3.76+02
DN/DLOGD (NO. PARTICLES/DNCM)	5.90+08	6.36+09	3.95+10	1.64+11	8.90+11	9.97+10	1.38+12	0.00	2.46+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 124 BRINK IMPACTOR A, INLET OF ESP, 7/26/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 5n.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.6192+00 GR/ACF 2.9219+00 GR/DNCF 3.6939+03 MG/ACM 6.5810+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	14.75	1.90	9.18	1.61	.90	.00	.00	.78	.93
MG/DNCM/STAGE	3.56+03	2.97+02	8.86+02	3.91+02	1.91+02	0.00	0.00	1.65+02	1.12+02
CUM. % OF MASS LESS THAN D50	35.95	30.60	19.61	8.46	5.01	5.01	5.01	2.03	
CUM. (MG/ACM) SMALLER THAN D50	1.33+03	1.13+03	5.40+02	3.12+02	1.85+02	1.85+02	1.85+02	7.51+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.99+03	1.70+03	8.10+02	4.69+02	2.78+02	2.78+02	2.78+02	1.13+02	
CUM. (GR/ACF) SMALLER THAN D50	5.80-01	4.94-01	2.36-01	1.37-01	8.09-02	8.09-02	8.09-02	3.28-02	
CUM. (GR/DNCF) SMALLER THAN D50	8.71-01	7.41-01	3.54-01	2.05-01	1.21-01	1.21-01	1.21-01	4.92-02	
GEO. MEAN DIA. (MICROMETERS)	2.03+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.92-01	4.19-01	2.75-01
DM/DLOGD (MG/DNCM)	9.52+03	1.60+03	3.18+03	1.33+03	2.30+03	0.00	0.00	6.90+02	3.73+02
DN/DLOGD (NO. PARTICLES/DNCM)	9.00+08	9.09+09	3.99+10	1.08+11	6.09+11	0.00	0.00	6.90+12	7.41+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 128 BRINK IMPACTOR B, INLET OF ESP, 7/26/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.9192+00 GR/ACF 9.3789+00 GR/DNCF 6.6801+03 MG/ACM 1.0020+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.55	.32	
MASS (MILLIGRAMS)	35.99	1.95	2.62	2.38	1.30	1.42	.99	.60	.59
MG/DNCM/STAGE	7.63+03	4.13+02	5.55+02	5.04+02	2.75+02	3.01+02	9.32+01	1.27+02	1.25+02
CUM. % OF MASS LESS THAN D50	23.90	19.78	14.29	9.20	6.45	3.45	2.52	1.25	
CUM. (MG/ACM) SMALLER THAN D50	1.60+03	1.32+03	9.51+02	6.15+02	4.31+02	2.31+02	1.68+02	8.37+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.39+03	1.98+03	1.43+03	9.22+02	6.47+02	3.46+02	2.53+02	1.26+02	
CUM. (GR/ACF) SMALLER THAN D50	6.98-01	5.77-01	4.16-01	2.69-01	1.88-01	1.01-01	7.36-02	3.66-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.05+00	8.66-01	6.23-01	4.03-01	2.83-01	1.51-01	1.10-01	5.49-02	
GEO. MEAN DIA. (MICROMETERS)	2.83+01	6.63+00	3.87+00	2.08+00	1.47+00	9.79-01	6.92-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	9.71+03	2.23+03	1.98+03	1.96+03	3.32+03	1.29+03	7.06+02	5.31+02	4.15+02
DN/DLOGD (NO. PARTICLES/DNCM)	8.59+08	5.63+09	2.50+10	1.59+11	8.72+11	1.01+12	1.96+12	5.31+12	7.49+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 15A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.65 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 57.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 1.8689+00 GR/ACF 3.0096+00 GR/DNCF 4.3225+03 MG/ACM 6.8357+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	20.31	1.94	4.42	1.00	1.16	.93	.38	.41	.16
MG/DNCM/STAGE	4.57+03	4.37+02	9.72+02	2.25+02	2.61+02	2.09+02	8.55+01	9.20+01	3.60+01
CUM. % OF MASS LESS THAN D50	33.63	27.29	13.17	9.91	6.12	3.06	1.24	.53	
CUM. (MG/ACM) SMALLER THAN D50	1.45+03	1.18+03	5.69+02	4.28+02	2.64+02	1.33+02	7.93+01	2.28+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.32+03	1.88+03	9.07+02	6.82+02	4.21+02	2.12+02	1.26+02	3.63+01	
CUM. (GR/ACF) SMALLER THAN D50	6.35-01	5.16-01	2.49-01	1.87-01	1.16-01	5.81-02	3.47-02	9.97-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.01+00	8.21-01	3.96-01	2.98-01	1.84-01	9.26-02	5.52-02	1.59-02	
GEO. MEAN DIA. (MICROMETERS)	2.76+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DW/DLOGD (MG/DNCM)	5.74+03	2.35+03	3.46+03	8.74+02	3.15+03	8.98+02	6.48+02	3.76+02	1.20+02
DW/DLOGD (NO. PARTICLES/DNCM)	5.28+08	6.42+09	4.73+10	7.68+10	8.93+11	7.54+11	1.94+12	4.06+12	8.36+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 MM HG.

RUN 13D BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.36 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 1.44E-02 GM/ACF 2.307E+01 GM/DNCF 3.315E+03 MG/ACM 5.271E+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.09	3.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	9.27	5.39	4.70	2.90	1.08	1.24	.37	.34	.18
MG/DNCM/STAGE	2.09E+03	7.63E+02	1.06E+03	6.53E+02	2.43E+02	2.79E+02	8.33E+01	7.65E+01	4.05E+01
CUM. % OF MASS LESS THAN D50	60.51	46.06	26.04	13.68	9.08	3.81	2.22	.77	
CUM. (MG/ACM) SMALLER THAN D50	2.01E+03	1.53E+03	8.63E+02	4.54E+02	3.01E+02	1.26E+02	7.36E+01	2.56E+01	
CUM. (MG/DNCM) SMALLER THAN D50	3.20E+03	2.43E+03	1.37E+03	7.23E+02	4.80E+02	2.01E+02	1.17E+02	4.08E+01	
CUM. (GR/ACF) SMALLER THAN D50	8.77E-01	6.67E-01	3.77E-01	1.98E-01	1.32E-01	5.5L-02	3.22E-02	1.12-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.40E+00	1.06E+00	6.01E-01	3.16E-01	2.10E-01	8.76E-02	5.12E-02	1.78E-02	
GEO. MEAN DIA. (MICROMETERS)	2.00E+01	6.46E+00	3.78E+00	2.03E+00	1.37E+00	9.54E-01	6.26E-01	4.08E-01	2.19E-01
DM/DLOGD (MG/DNCM)	2.62E+03	4.11E+03	3.77E+03	2.54E+03	2.93E+02	1.19E+03	6.31E+02	3.19E+2	1.35E+02
DN/DLOGD (NO. PARTICLES/DNCM)	2.41E+08	1.12E+10	5.14E+10	2.22E+11	8.31E+11	1.01E+12	1.89E+12	3.45E+12	9.46E+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

RUN 14A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .850 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF Hg STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.67 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 57.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.36

CALC. MASS LOADING = 2.8198+00 GR/ACF 4.4915+00 GR/DNCF 6.4527+03 MG/ACM 1.0279+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.28	2.73	1.51	1.25	.79	.54	.31	
MASS (MILLIGRAMS)	34.97	2.01	4.06	2.35	1.14	.00	.40	.29	.26
MG/DNCM/STAGE	7.87+03	4.52+02	9.14+02	5.74+02	2.57+02	0.00	9.00+01	6.53+01	5.85+01
CUM. % OF MASS LESS THAN D50	23.65	19.25	10.16	4.58	2.08	2.08	1.21	.57	
CUM. (MG/ACM) SMALLER THAN D50	1.51+03	1.23+03	6.96+02	2.96+02	1.35+02	1.35+02	7.80+01	3.70+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.41+03	1.96+03	1.04+03	4.71+02	2.14+02	2.14+02	1.24+02	5.90+01	
CUM. (GR/ACF) SMALLER THAN D50	6.61-01	5.37-01	2.97-01	1.29-01	5.88-02	5.88-02	3.41-02	1.62-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.05+00	8.56-01	4.56-01	2.06-01	9.36-02	9.36-02	5.43-02	2.58-02	
GEO. MEAN DIA. (MICROMETERS)	2.70+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.09-01	2.19-01
DN/DLOGD (MG/DNCM)	9.68+03	2.44+03	3.25+03	2.23+03	3.09+03	0.00	6.82+02	2.72+02	1.94+02
DN/DLOGD (NO. PARTICLES/DNCM)	9.02+08	6.65+09	4.44+10	1.95+11	8.78+11	0.00	2.74+12	2.94+12	1.36+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

1 RUN 14B BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.65 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 57.7 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.66 H2O = 8.31

CALC. MASS LOADING = 4.0995+00 GR/ACF 6.5374+00 GR/DNCF 9.3813+03 MG/ACM 1.4944+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.31	1.25	.75	.54	.31	
MASS (MILLIGRAMS)	49.24	3.19	6.48	3.62	1.70	1.34	.45	.32	.13
MG/DNCM/STAGE	1.11+04	7.18+02	1.46+03	8.15+02	3.83+02	2.97+02	1.01+02	7.20+01	2.93+01
CUM. % OF MASS LESS THAN D50	25.96	21.12	11.76	5.91	3.35	1.76	.68	.20	
CUM. (MG/ACM) SMALLER THAN D50	2.43+03	1.98+03	1.07+03	5.54+02	3.14+02	1.26+02	6.40+01	1.88+01	
CUM. (MG/DNCM) SMALLER THAN D50	3.87+03	3.16+03	1.70+03	8.83+02	5.00+02	2.03+02	1.02+02	3.00+01	
CUM. (GR/ACF) SMALLER THAN D50	1.06+00	8.66-01	4.66-01	2.42-01	1.37-01	5.58-02	2.80-02	8.23-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.69+00	1.38+00	7.42-01	3.86-01	2.19-01	8.88-02	4.46-02	1.31-02	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	1.39+04	3.87+03	5.19+03	3.17+03	4.61+03	1.27+03	7.67+02	3.61+02	9.72+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.26+09	1.06+10	7.09+10	2.77+11	1.31+12	1.08+12	2.29+12	7.25+12	6.79+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

1 RUN 15A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .750 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.6[illegible] GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.40 H2O = 8.00

CALC. MASS LOADING = 2.4[illegible]+00 GR/ACF 3.9580+00 GR/DNCF 5.6856+03 MG/ACM 9.0572+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	29.76	1.86	3.82	3.03	.99	.55	.00	.18	.06
MG/DNCM/STAGE	6.70+03	4.19+02	8.60+02	6.82+02	2.23+02	1.24+02	0.00	4.05+01	1.35+01
CUM. % OF MASS LESS THAN D50	26.07	21.45	11.96	4.43	1.97	.60	.60	.15	
CUM. (MG/ACM) SMALLER THAN D50	1.46+03	1.22+03	6.90+02	2.52+02	1.12+02	3.42+01	3.42+01	8.76+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.36+03	1.94+03	1.08+03	4.01+02	1.78+02	5.45+01	5.45+01	1.40+01	
CUM. (GR/ACF) SMALLER THAN D50	6.48-01	5.33-01	2.97-01	1.10-01	4.89-02	1.49-02	1.49-02	3.83-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.03+00	8.49-01	4.73-01	1.75-01	7.79-02	2.38-02	2.38-02	6.10-03	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.76+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DN/DLOGD (MG/DNCM)	8.41+03	2.26+03	3.06+03	2.65+03	2.69+03	5.30+02	0.00	1.69+02	4.49+01
DN/DLOGD (NO. PARTICLES/DNCM)	7.73+08	6.16+09	4.18+10	2.32+11	7.62+11	4.49+11	0.00	1.83+12	3.13+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 MM HG.

1 RUN 15D BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 2.2716+00 GR/ACF 3.6187+00 GR/DNCF 5.1987+03 MG/ACM 8.2808+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	19.36	2.78	5.77	2.63	1.24	1.42	.14	3.75	.09
MG/DNCM/STAGE	4.36+03	6.26+02	1.21+03	5.92+02	2.79+02	3.20+02	3.15+01	8.44+02	2.03+01
CUM. % OF MASS LESS THAN D50	47.34	39.79	25.2[illegible]	18.05	14.68	10.[illegible]	10.44	.25	
CUM. (MG/ACM) SMALLER THAN D50	2.46+03	2.07+03	1.31+03	9.38+02	7.63+02	5.62+02	5.43+02	1.30+01	
CUM. (MG/DNCM) SMALLER THAN D50	3.92+03	3.29+03	2.09+03	1.49+03	1.22+03	8.96+02	8.65+02	2.07+01	
CUM. (GR/ACF) SMALLER THAN D50	1.08+00	9.04-01	5.72-01	4.10-01	3.33-01	2.46-01	2.37-01	5.67-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.71+00	1.44+00	9.12-01	6.53-01	5.31-01	3.92-01	3.78-01	9.03-03	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	5.48+03	3.37+03	4.30+03	2.30+03	3.36+03	1.37+03	2.39+02	3.52+03	6.73+01
DN/DLOGD (NO. PARTICLES/DNCM)	5.03+08	9.20+09	5.86+10	2.01+11	9.55+11	1.16+12	7.14+11	3.80+13	4.70+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

1 RUN 16A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .750 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .04 N2 = 72.68 O2 = 4.66 H2O = 8.00

CALC. MASS LOADING = 3.6359E-02 GR/ACF 5.7999E-02 GR/DNCF 8.3261E+03 MG/ACM 1.3254E+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.75	.54	.31	
MASS (MILLIGRAMS)	46.46	2.18	4.35	2.85	1.32	.84	.34	.05	.51
MG/DNCM/STAGE	1.05E+04	4.91E+02	9.79E+02	6.41E+02	2.97E+02	1.88E+02	8.55E+01	1.13E+01	1.15E+02
CUM. % OF MASS LESS THAN D50	21.13	17.42	10.04	5.20	2.96	1.61	.96	.87	
CUM. (MG/ACM) SMALLER THAN D50	1.76E+03	1.45E+03	8.35E+02	4.33E+02	2.46E+02	1.33E+02	7.95E+01	7.25E+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.96E+03	2.31E+03	1.33E+03	6.89E+02	3.92E+02	2.12E+02	1.27E+02	1.15E+02	
CUM. (GR/ACF) SMALLER THAN D50	7.68-01	6.34-01	3.65-01	1.89-01	1.08-01	5.82-02	3.46-02	3.17-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.22E+00	1.01E+00	5.81-01	3.01-01	1.71-01	9.27-02	5.54-02	5.04-02	
GEO. MEAN DIA. (MICROMETERS)	2.00E+01	6.46E+00	3.78E+00	2.03E+00	1.37E+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	1.31E+04	2.66E+03	3.69E+03	2.49E+03	3.58E+03	7.71E+02	6.48E+02	4.70E+01	3.81E+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.21E+09	7.21E+09	4.76E+10	2.18E+11	1.02E+12	6.52E+11	1.94E+12	5.07E+11	2.48E+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

RUN 169 BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.6[illegible] GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 5[illegible].0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 2.8[illegible] GR/ACF 4.617[illegible] GM/DNCF 6.633[illegible] MG/ACM 1.6[illegible]4 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	28.61	6.72	4.58	3.26	1.49	.69	.54	.46	.61
MG/DNCM/STAGE	6.44+03	1.51+03	1.03+03	7.34+02	3.35+02	1.55+02	1.22+02	1.04+02	1.37+02
CUM. % OF MASS LESS THAN D50	39.08	24.77	15.02	8.08	4.90	3.43	2.28	1.30	
CUM. (MG/ACM) SMALLER THAN D50	2.59+03	1.64+03	9.96+02	5.36+02	3.25+02	2.22+02	1.51+02	8.65+01	
CUM. (MG/DNCM) SMALLER THAN D50	4.13+03	2.62+03	1.59+03	8.53+02	5.18+02	3.53+02	2.41+02	1.38+02	
CUM. (GR/ACF) SMALLER THAN D50	1.13+00	7.18-01	4.35-01	2.34-01	1.42-01	9.95-02	6.62-02	3.78-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.81+00	1.14+00	6.93-01	3.73-01	2.26-01	1.59-01	1.05-01	6.02-02	
GEO. MEAN DIA. (MICROMETERS)	2.01+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.20-01	4.08-01	2.19-01
DN/DLOGD (MG/DNCM)	6.99+03	8.15+03	5.67+03	2.65+03	4.64+03	6.65+02	9.20+02	4.32+02	4.56+02
DN/DLOGD (NO. PARTICLES/DNCM)	7.43+08	2.22+10	5.[illegible]1+10	2.50+11	1.15+12	5.63+11	2.75+12	4.67+12	3.19+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

RUN 17A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 6.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAR. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 2.140E+01 GR/ACF 5.41E+00 GR/DNCF 4.89E+03 MG/ACM 7.83E+03 MG/DNCM

IMPACTOR STAGE	CYC	SC	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.34	.31	
MASS (MILLIGRAMS)	26.98	1.55	2.78	2.42	.98	.76	.13	.04	.00
MG/DNCM/STAGE	6.07E+03	3.49E+02	6.26E+02	5.45E+02	1.80E+01	1.56E+02	2.93E+01	9.00E+00	0.00
CUM. % OF MASS LESS THAN D50	22.21	17.74	9.72	2.74	2.51	.56	.12	.01	
CUM. (MG/ACM) SMALLER THAN D50	1.09E+03	8.69E+02	4.76E+02	1.34E+02	1.23E+02	2.43E+01	5.90E+00	2.45-01	
CUM. (MG/DNCM) SMALLER THAN D50	1.73E+03	1.38E+03	7.59E+02	2.14E+02	1.96E+02	3.88E+01	9.39E+00	3.91-01	
CUM. (GR/ACF) SMALLER THAN D50	4.75-01	3.35-01	2.08-01	5.88-02	5.38-02	1.06-02	2.58-03	1.07-04	
CUM. (GR/DNCF) SMALLER THAN D50	7.57-01	6.05-01	3.32-01	9.36-02	8.57-02	1.69-02	4.10-03	1.71-04	
GEO. MEAN DIA. (MICROMETERS)	2.04E+01	6.46E+00	3.78E+00	2.03E+00	1.37E+00	9.54-01	6.26-01	4.08-01	2.19-.1
DM/DLOGD (MG/DNCM)	7.03E+03	1.88E+03	2.23E+03	2.12E+03	2.17E+02	6.74E+02	2.22E+02	3.76E+01	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	7.01E+08	5.13E+09	3.24E+10	1.85E+11	6.16E+10	5.71E+11	6.63E+11	4.06E+11	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

1 RUN 17B BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 2.7982+00 GR/ACF 4.4575+00 GR/DNCF 6.4032+03 MG/ACM 1.0200+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.09	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	27.01	1.81	3.74	2.45	1.54	8.62	.00	.02	.11
MG/DNCM/STAGE	6.08+03	4.07+02	8.42+02	5.58+02	3.47+02	1.94+03	0.00	4.50+00	2.48+01
CUM. % OF MASS LESS THAN D50	40.42	36.43	28.18	22.71	19.31	.29	.29	.25	
CUM. (MG/ACM) SMALLER THAN D50	2.59+03	2.33+03	1.80+03	1.45+03	1.24+03	1.87+01	1.87+01	1.59+01	
CUM. (MG/DNCM) SMALLER THAN D50	4.12+03	3.72+03	2.87+03	2.32+03	1.97+03	2.98+01	2.98+01	2.53+01	
CUM. (GR/ACF) SMALLER THAN D50	1.13+00	1.02+00	7.88-01	6.35-01	5.40-01	8.16-03	8.16-03	6.93-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.80+00	1.62+00	1.26+00	1.01+00	8.61-01	1.30-02	1.30-02	1.10-02	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DN/DLOGD (MG/DNCM)	7.63+03	2.20+03	3.00+03	2.17+03	4.18+03	8.31+03	0.00	1.88+01	8.22+01
DN/DLOGD (NO. PARTICLES/DNCM)	7.02+08	5.99+09	4.09+10	1.90+11	1.19+12	7.03+12	0.00	2.03+11	5.75+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 18A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.66 O2 = 4.64 H2O = 8.30

CALC. MASS LOADING = 1.5790+00 GR/ACF 2.5154+00 GR/DNCF 3.6134+02 MG/ACM 5.7561+03 MG/DNCM

IMPACTOR STAGE	CYC	S1	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	23.07	.01	1.00	.00	.19	.52	.00	.00	.20
MG/DNCM/STAGE	5.19+03	0.01	3.66+02	0.00	4.28+01	1.17+02	0.00	0.00	4.50+01
CUM. % OF MASS LESS THAN D50	9.82	9.82	3.56	3.56	2.82	.79	.79	.79	
CUM. (MG/ACM) SMALLER THAN D50	3.55+02	3.55+02	1.29+02	1.29+02	1.02+02	2.84+01	2.84+01	2.84+01	
CUM. (MG/DNCM) SMALLER THAN D50	5.65+02	5.65+02	2.05+02	2.05+02	1.62+02	4.53+01	4.53+01	4.53+01	
CUM. (GR/ACF) SMALLER THAN D50	1.55-01	1.55-01	5.63-02	5.63-02	4.45-02	1.24-02	1.24-02	1.24-02	
CUM. (GR/DNCF) SMALLER THAN D50	2.47-01	2.47-01	8.96-02	8.96-02	7.09-02	1.98-02	1.98-02	1.98-02	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.09+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	6.32+03	0.00	1.25+03	0.00	5.15+02	5.01+02	0.00	0.00	1.50+02
DN/DLOGD (NO. PARTICLES/DNCM)	5.99+08	0.00	1.75+10	0.00	1.46+11	4.24+11	0.00	0.00	1.04+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

RUN 18D BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 1.6223+00 GR/ACF 2.5842+00 GR/DNCF 3.7127+03 MG/ACM 5.9136+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	9.01	4.50	4.70	4.90	1.04	.90	.90	.33	.42
MG/DNCF/STAGE	2.03+03	1.01+03	9.48+02	1.08+03	2.34+02	2.21+02	2.03+02	7.43+01	9.45+01
CUM. % OF MASS LESS THAN D50	65.72	46.60	32.23	13.97	10.01	6.20	2.86	1.60	
CUM. (MG/ACM) SMALLER THAN D50	2.44+03	1.80+03	1.20+03	5.19+02	3.72+02	2.33+02	1.06+02	5.95+01	
CUM. (MG/DNCM) SMALLER THAN D50	3.89+03	2.87+03	1.91+03	8.26+02	5.92+02	3.72+02	1.69+02	9.48+01	
CUM. (GR/ACF) SMALLER THAN D50	1.07+00	7.88-01	5.23-01	2.27-01	1.62-01	1.02-01	4.64-02	2.60-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.70+00	1.26+00	8.33-01	3.61-01	2.59-01	1.62-01	7.39-02	4.14-02	
GEO. MEAN DIA. (MICROMETERS)	2.50+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	2.55+03	5.46+03	3.45+03	4.20+03	2.62+03	9.44+02	1.53+03	3.10+02	3.14+02
DN/DLOGD (NO. PARTICLES/DNCM)	2.34+08	1.49+10	4.71+10	3.68+11	8.01+11	7.99+11	4.59+12	3.35+12	2.19+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

RUN 19A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.01 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.64 H2O = 8.00

CALC. MASS LOADING = 1.53644E-2 GR/ACF 2.44754E-2 GR/DNCF 3.51594E3 MG/ACF 5.60284E3 MG/DNCM

IMPACTOR STAGE	CYC	S1	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.71	.54	.31	
MASS (MILLIGRAMS)	13.16	2.02	4.94	.00	3.37	.85	.37	.03	.25
MG/DNCM/STAGE	2.95E03	4.55E02	1.11E03	0.00	7.58E02	1.87E02	8.33E01	6.75E00	5.62E01
CUM. % OF MASS LESS THAN D50	47.97	39.26	19.41	19.41	5.87	2.54	1.05	.93	
CUM. (MG/ACM) SMALLER THAN D50	1.67E03	1.38E03	6.82E02	6.82E02	2.06E02	8.92E01	3.69E01	3.27E01	
CUM. (MG/DNCM) SMALLER THAN D50	2.65E03	2.20E03	1.09E03	1.09E03	3.29E02	1.42E02	5.88E01	5.20E01	
CUM. (GR/ACF) SMALLER THAN D50	7.28-01	6.03-01	2.98-01	2.98-01	9.02-02	3.90-02	1.61-02	1.43-02	
CUM. (GR/DNCF) SMALLER THAN D50	1.16E00	9.61-01	4.75-01	4.75-01	1.44-01	6.21-02	2.57-02	2.27-02	
GEO. MEAN DIA. (MICROMETERS)	2.00E01	6.66E00	3.78E00	2.03E00	1.37E00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	3.70E03	2.45E03	3.96E03	0.00	9.14E03	8.00E02	6.21E02	2.82E01	1.72E02
DN/DLOGD (NO. PARTICLES/DNCM)	3.40E08	6.69E09	5.41E10	0.00	2.59E12	6.77E11	1.89E12	3.04E11	1.2LE13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

1 RUN 19B BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 3.8137+00 GR/ACF 6.0751+00 GR/DNCF 8.7269+03 MG/ACM 1.3902+04 MG/DNCM

IMPACTOR STAGE	CYC	S1	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.73	.54	.31	
MASS (MILLIGRAMS)	55.62	.56	.76	1.78	1.26	.36	.29	1.55	.24
MG/DNCM/STAGE	1.25+04	1.49+02	2.02	4.01+02	2.84+02	8.55+01	6.53+01	3.49+02	5.40+01
CUM. % OF MASS LESS THAN D50	9.98	8.91	8.91	6.03	3.99	3.37	2.96	.39	
CUM. (MG/ACM) SMALLER THAN D50	8.71+02	7.77+02	7.77+02	5.26+02	3.48+02	2.94+02	2.53+02	3.43+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.39+03	1.24+03	1.24+03	8.38+02	5.54+02	4.69+02	4.03+02	5.47+01	
CUM. (GR/ACF) SMALLER THAN D50	3.80-01	3.40-01	3.40-01	2.30-01	1.52-01	1.29-01	1.11-01	1.50-02	
CUM. (GR/DNCF) SMALLER THAN D50	6.06-01	5.41-01	5.41-01	3.66-01	2.42-01	2.05-01	1.76-01	2.39-02	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	1.57+04	8.01+02	0.00	1.56+03	3.42+03	3.66+02	6.94+02	1.46+03	1.79+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.44+09	2.18+09	0.00	1.36+11	9.76+11	3.16+11	1.48+12	1.57+13	1.25+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

1 RUN 20A BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .850 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.66 H2O = 8.00

CALC. MASS LOADING = 1.4599E-06 GR/ACF 2.3256E-06 GR/DNCF 3.3408E-03 MG/ACM 5.3218E-03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.09	5.22	2.73	1.51	1.25	.75	.54	.31	
MASS (MILLIGRAMS)	19.36	.37	.95	1.30	.84	.25	.00	.55	.03
MG/DNCM/STAGE	4.36+03	8.33+01	2.14+02	2.93+02	1.89+02	5.63+01	0.00	1.24+02	6.75+00
CUM. % OF MASS LESS THAN D50	18.14	16.58	12.56	7.67	3.51	2.46	2.46	.13	
CUM. (MG/ACM) SMALLER THAN D50	6.06+02	5.54+02	4.70+02	2.36+02	1.17+02	8.21+01	8.21+01	4.40+00	
CUM. (MG/DNCM) SMALLER THAN D50	9.66+02	8.82+02	6.69+02	3.76+02	1.87+02	1.31+02	1.31+02	7.02+00	
CUM. (GR/ACF) SMALLER THAN D50	2.65-01	2.42-01	1.83-01	1.03-01	5.13-02	3.59-02	3.59-02	1.92-03	
CUM. (GR/DNCF) SMALLER THAN D50	4.22-01	3.86-01	2.92-01	1.64-01	8.17-02	5.72-02	5.72-02	3.07-03	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.64+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	5.47+03	4.49+02	7.61+02	1.36+03	2.28+03	2.61+02	0.00	5.17+02	2.24+01
DN/DLOGD (NO. PARTICLES/DNCM)	5.03+08	1.22+08	1.04+10	9.96+10	6.47+11	2.04+11	0.00	5.58+12	1.57+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

RUN 208 BRINK IMPACTOR, INLET OF ESP

IMPACTOR FLOWRATE = .05[illegible] ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.64 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 55.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.68 H2O = 8.00

CALC. MASS LOADING = 5.8[illegible] GR/ACF 9.39[illegible]+00 GR/DNCF 1.34[illegible]+04 MG/ACM 2.14[illegible]+04 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	7.99	5.22	2.73	1.51	1.25	.75	.54	.31	
MASS (MILLIGRAMS)	89.18	.42	.95	.54	.50	2.91	.36	.56	.10
MG/DNCM/STAGE	2.01+04	9.45+01	1.91+02	1.22+02	1.13+02	6.55+02	8.1[illegible]+01	1.26+02	4.05+01
CUM. % OF MASS LESS THAN D50	6.62	6.18	5.29	4.73	4.20	1.16	.78	.19	
CUM. (MG/ACM) SMALLER THAN D50	6.93+02	8.34+02	7.14+02	6.38+02	5.67+02	1.56+02	1.05+02	2.61+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.42+03	1.33+03	1.14+03	1.02+03	9.03+02	2.49+02	1.68+02	4.16+01	
CUM. (GR/ACF) SMALLER THAN D50	3.02-01	3.64-01	3.12-01	2.79-01	2.48-01	6.8[illegible]-02	4.60-02	1.14-02	
CUM. (GR/DNCF) SMALLER THAN D50	6.22-01	5.81-01	4.97-01	4.44-01	3.95-01	1.0[illegible]-01	7.32-02	1.82-02	
GEO. MEAN DIA. (MICROMETERS)	2.00+01	6.46+00	3.78+00	2.03+00	1.37+00	9.54-01	6.26-01	4.08-01	2.19-01
DM/DLOGD (MG/DNCM)	2.52+04	5.19+02	6.81+02	4.72+02	1.36+03	2.80+03	6.13+02	5.26+02	1.35+02
DN/DLOGD (NO. PARTICLES/DNCM)	2.32+09	1.39+09	9.70+09	4.14+10	3.85+11	2.37+12	1.84+12	5.68+12	9.40+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 76 CM HG.

RUN 1A U OF W -A- ,OUTLET OF ESP, 6/27/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 10.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 7.30

CALC. MASS LOADING = 4.6760-02 GM/ACF 7.0143-02 GR/DNCF 1.0700+02 MG/ACM 1.6051+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	9.28	1.89	1.15	.55	.27	
MASS (MILLIGRAMS)	1.80	.35	.89	.50	2.12	1.83	1.05	.55
MG/DSCM/STAGE	3.22+01	6.26+00	1.59+01	8.95+00	3.79+01	3.28+01	1.88+01	9.84+00
CUM. PERCENT OF MASS SMALLER THAN $D50$	80.20	76.35	66.56	61.06	37.79	17.61	6.06	
CUM. (MG/ACM) SMALLER THAN D50	8.58+01	8.17+01	7.12+01	6.53+01	4.04+01	1.88+01	6.48+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.29+02	1.23+02	1.07+02	9.80+01	6.06+01	2.83+01	9.72+00	
CUM. (GR/ACF) SMALLER THAN D50	3.75-02	3.57-02	3.11-02	2.86-02	1.76-02	8.23-03	2.83-03	
CUM. (GR/DNCF) SMALLER THAN D50	5.63+02	5.36-02	4.67-02	4.28-02	2.65-02	1.23-02	4.25-03	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	4.91+01	-2.35+02	4.38+01	2.45+01	1.86+02	1.03+02	6.08+01	3.27+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.24+06	-1.96+08	1.17+08	8.13+08	4.92+10	1.99+11	7.70+11	3.91+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 18 U OF W -R- ,OUTLET OF SSP, 4/27/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 10.20 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 5.7241-02 GR/ACF 8.5869-02 GR/DNCF 1.3099+02 MG/ACM 1.9649+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	4.28	1.89	1.15	.55	.27	
MASS (MILLIGRAMS)	1.73	.22	.93	1.12	1.89	3.30	.99	1.37
MG/DSCM/STAGE	3.04+01	3.86+00	7.55+00	1.97+01	3.32+01	5.79+01	2.[illegible]+01	2.40+01
CUM. PERCENT OF MASS SMALLER THAN D50	84.76	82.82	79.04	69.17	52.52	23.49	12.08	
CUM. (MG/ACM) SMALLER THAN D50	1.11+02	1.08+02	1.04+02	9.06+01	6.88+01	3.07+01	1.58+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.67+02	1.63+02	1.55+02	1.36+02	1.03+02	4.61+01	2.37+01	
CUM. (GR/ACF) SMALLER THAN D50	4.85-02	4.74-02	4.52-02	3.96-02	3.01-02	1.34-02	6.91-03	
CUM. (GR/DNCF) SMALLER THAN D50	7.28-02	7.11-02	6.79-02	5.94-02	4.51-02	2.01-02	1.04-02	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	4.15+01	1.45+02	8.08+01	5.37+01	1.62+02	1.82+02	7.32+01	7.99+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.05+06	1.21+08	5.56+07	1.78+09	3.86+10	2.63+11	9.27+11	8.37+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 2A U OF W -4- ,OUTLET OF ESP, 6/28/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 252.0 F = 122.2 C SAMPLING DURATION = 11.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 252.0 F = 122.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 9.3257-02 GR/ACF 6.5071-02 GR/DNCF 9.8988+01 MG/ACM 1.4891+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.88	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	1.99	.25	.90	.44	2.19	2.08	.89	1.01
MG/DSCM/STAGE	3.25+01	4.08+00	6.53+00	7.18+00	3.57+01	3.39+01	1.45+01	1.65+01
CUM. PERCENT OF MASS SMALLER THAN $D50_i$	78.49	75.79	71.96	66.71	43.03	20.55	10.92	
CUM. (MG/ACM) SMALLER THAN D50	7.77+01	7.50+01	7.07+01	6.60+01	4.26+01	2.03+01	1.08+01	
CUM. (MG/DNCM) SMALLER THAN D50	1.17+02	1.13+02	1.06+02	9.93+01	6.41+01	3.06+01	1.63+01	
CUM. (GR/ACF) SMALLER THAN D50	3.40+02	3.28-02	3.09-02	2.89-02	1.86-02	8.89-03	4.73-03	
CUM. (GR/DNCF) SMALLER THAN D50	5.11+02	4.93-02	4.65-02	4.34-02	2.80-02	1.34-02	7.11-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	4.44+01	-1.53+02	1.80+01	1.96+01	1.75+02	1.06+02	4.69+01	5.47+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.26+06	-1.28+08	4.80+07	6.50+08	4.15+10	1.54+11	5.94+11	5.70+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 28 U OF W -R- ,OUTLET OF ESP, 6/29/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 10.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 5m.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 5.5402-02 GR/ACF 8.3106-02 GR/DNCF 1.2678+02 MG/ACM 1.9018+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	3.22	.48	.60	.00	2.67	9.73	1.02	.05
MG/DSCM/STAGE	5.76+01	8.59+00	1.07+01	0.00	4.78+01	4.89+01	1.83+01	8.95-01
CUM. PERCENT OF MASS SMALLER THAN D50	70.11	65.65	60.08	60.08	35.29	9.99	.47	
CUM. (MG/ACM) SMALLER THAN D50	8.89+01	8.32+01	7.62+01	7.62+01	4.47+01	1.26+01	5.95-01	
CUM. (MG/DNCM) SMALLER THAN D50	1.33+02	1.25+02	1.14+02	1.14+02	6.71+01	1.89+01	8.92-01	
CUM. (GR/ACF) SMALLER THAN D50	3.88-02	3.64-02	3.33-02	3.33-02	1.96+02	5.51-03	2.60-04	
CUM. (GR/DNCF) SMALLER THAN D50	5.83-02	5.46-02	4.99-02	4.99-02	2.91-02	8.26-03	3.90-04	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	7.88+01	-3.22+02	7.96+01	0.00	2.34+02	1.53+02	5.91+01	2.97+00
DN/DLOGD (NO. PARTICLES/DNCM)	5.79+06	-2.69+08	7.91+07	0.00	5.56+10	2.22+11	7.48+11	3.10+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 3A U OF W -A- ,OUTLET OF ESP, 4/30/77. PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 20.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.3195-01 GR/ACF 1.9793-01 GR/DNCF 3.0194+02 MG/ACM 4.5292+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	4.28	1.89	1.15	.55	.27	
MASS (MILLIGRAMS)	14.95	2.36	5.93	7.71	7.29	4.73	2.33	2.00
MG/DSCM/STAGE	1.52+02	2.11+01	5.31+01	6.90+01	6.52+01	6.02+01	2.09+01	1.79+01
CUM. PERCENT OF MASS SMALLER THAN D50	66.96	62.36	50.80	35.77	21.56	8.95	3.90	
CUM. (MG/ACM) SMALLER THAN D50	2.02+02	1.88+02	1.53+02	1.08+02	6.51+01	2.68+01	1.18+01	
CUM. (MG/DNCM) SMALLER THAN D50	3.03+02	2.82+02	2.30+02	1.62+02	9.77+01	3.83+01	1.77+01	
CUM. (GR/ACF) SMALLER THAN D50	8.84-02	8.23-02	6.70-02	4.72-02	2.85-02	1.11-02	5.15-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.33-01	1.23-01	1.01-01	7.08-02	4.27-02	1.67-02	7.73-03	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	2.07+02	-7.92+02	1.46+02	1.89+02	3.19+02	1.89+02	6.74+01	5.95+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.52+07	-6.62+08	3.91+08	6.26+09	7.59+10	2.73+11	8.54+11	6.19+12

NORMAL (ENGINEERING S... ARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 3A U OF W -A- ,OUTLET OF ESP, 4/30/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 20.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.2591-01 GR/ACF 1.8813-01 GR/DNCF 2.8697+02 MG/ACM 4.3050+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	4.29	1.89	1.15	.55	.*	
MASS (MILLIGRAMS)	19.75	1.31	4.96	4.73	6.59	5.61	7.82	3.59
MG/DSCM/STAGE	1.77+02	1.17+01	3.99+01	4.23+01	5.85+01	5.02+01	2.52+01	3.17+01
CUM. PERCENT OF MASS SMALLER THAN D50	59.50	56.81	47.67	37.97	29.55	13.05	7.27	
CUM. (MG/ACM) SMALLER THAN D50	1.71+02	1.63+02	1.37+02	1.09+02	7.05+01	3.74+01	2.08+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.56+02	2.45+02	2.05+02	1.63+02	1.06+02	5.62+01	3.13+01	
CUM. (GR/ACF) SMALLER THAN D50	7.46-02	7.13-02	5.98-02	4.76-02	3.08-02	1.64-02	9.11-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.12-01	1.07-01	8.97-02	7.14-02	4.62-02	2.45-02	1.37-02	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	2.42+02	-9.39+02	1.10+02	1.16+02	2.87+02	1.58+02	8.16+01	1.05+02
DN/DLOGD (NO. PARTICLES/DNCM)	1.77+07	-3.68+08	2.94+08	3.84+09	6.81+10	2.28+11	1.03+12	1.10+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 4A BRINK B, INLET OF ESP, 7/14/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 220.0 F = 104.4 C SAMPLING DURATION = 6.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 220.0 F = 104.4 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.7351+00 GR/ACF 2.4927+00 GR/DNCF 3.9705+03 MG/ACM 5.7041+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.08	5.27	2.76	1.53	1.26	.79	.59	.31	
MASS (MILLIGRAMS)	29.57	3.06	2.12	2.79	.79	.90	.00	.00	.05
MG/DNCM/STAGE	4.16+03	5.17+02	3.59+02	4.63+02	1.34+02	6.76+01	0.00	0.00	8.46+00
CUM. % OF MASS LESS THAN D50	27.14	18.09	11.80	3.48	1.34	.15	.15	.15	
CUM. (MG/ACM) SMALLER THAN D50	1.08+03	7.18+02	4.69+02	1.96+02	5.32+01	6.08+00	6.08+00	6.08+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.55+03	1.03+03	6.73+02	2.10+02	7.64+01	8.74+00	8.74+00	8.74+00	
CUM. (GR/ACF) SMALLER THAN D50	4.71-01	3.14-01	2.05-01	8.39-02	2.32-02	2.66-03	2.66-03	2.66-03	
CUM. (GR/DNCF) SMALLER THAN D50	6.77-01	4.51-01	2.94-01	9.18-02	3.34-02	3.82-03	3.82-03	3.82-03	
GEO. MEAN DIA. (MICROMETERS)	2.01+01	6.52+00	3.81+00	2.05+00	1.39+00	9.63-01	6.32-01	4.12-01	2.21-01
DM/DLOGD (MG/DNCM)	5.25+03	2.79+03	1.28+03	1.80+03	1.61+03	2.90+02	0.00	0.00	2.81+01
DN/DLOGD (NO. PARTICLES/DNCM)	4.75+08	7.38+09	1.69+10	1.53+11	4.43+11	2.38+11	0.00	0.00	1.90+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 48 BRINK A, INLET OF ESP, 7/14/77

IMPACTOR FLOWRATE = .050 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 5.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.40 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.99 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 2.2714+00 GR/ACF 3.4076+00 GR/DNCF 5.1983+03 MG/ACM 7.7977+03 MG/DNCM

IMPACTOR STAGE	CYC	S0	S1	S2	S3	S4	S5	S6	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8	9
D50 (MICROMETERS)	8.20	5.35	2.80	1.55	1.28	.75	.56	.32	
MASS (MILLIGRAMS)	27.32	2.28	3.30	1.66	.88	.00	.00	1.19	.22
MG/DNCM/STAGE	5.79+03	4.83+02	6.99+02	3.52+02	1.86+02	0.00	0.00	2.52+02	4.66+01
CUM. % OF MASS LESS THAN D50	25.77	19.57	10.60	6.09	3.70	3.70	3.70	.60	
CUM. (MG/ACM) SMALLER THAN D50	1.34+03	1.02+03	5.51+02	3.17+02	1.92+02	1.92+02	1.92+02	3.13+01	
CUM. (MG/DNCM) SMALLER THAN D50	2.01+03	1.53+03	8.27+02	4.75+02	2.89+02	2.89+02	2.89+02	4.70+01	
CUM. (GR/ACF) SMALLER THAN D50	5.85-01	4.45-01	2.41-01	1.38-01	8.41-02	8.41-02	8.41-02	1.37-02	
CUM. (GR/DNCF) SMALLER THAN D50	8.78-01	6.67-01	3.61-01	2.08-01	1.26-01	1.26-01	1.26-01	2.05-02	
GEO. MEAN DIA. (MICROMETERS)	2.01+01	6.63+00	3.87+00	2.08+00	1.41+00	9.79-01	6.42-01	4.19-01	2.25-01
DM/DLOGD (MG/DNCM)	7.37+03	2.60+03	2.99+03	1.37+03	2.26+03	0.00	0.00	1.01+03	1.65+02
DN/DLOGD (NO. PARTICLES/DNCM)	6.52+08	6.58+09	3.15+10	1.11+11	5.91+11	0.00	0.00	1.01+13	1.00+13

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 5A U OF W -A- ,OUTLET OF ESP, 7/15/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 41.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 1.2582-02 GR/ACF 1.8879-02 GR/DNCF 2.8797+01 MG/ACM 4.3189+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.29	9.87	9.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	1.29	1.18	1.12	1.38	1.92	3.74	3.57	.72
MG/DSCM/STAGE	3.79+00	3.46+00	3.29+00	4.05+00	5.63+00	1.10+01	1.05+01	2.11+00
CUM. PERCENT OF MASS SMALLER THAN D50	91.36	83.45	75.99	66.69	53.83	28.76	4.83	
CUM. (MG/ACM) SMALLER THAN D50	2.63+01	2.40+01	2.19+01	1.92+01	1.55+01	8.28+00	1.39+00	
CUM. (MG/DNCM) SMALLER THAN D	3.96+01	3.60+01	3.28+01	2.88+01	2.32+01	1.24+01	2.09+00	
CUM. (GR/ACF) SMALLER THAN D50	1.15-02	1.05-02	9.56-03	8.39-03	6.77-03	3.62-03	6.08-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.72-02	1.58-02	1.43-02	1.26-02	1.02-02	5.43-03	9.12-04	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DN/DLOGD (MG/DNCM)	5.18+00	-1.30+02	9.09+00	1.11+01	2.76+01	3.44+01	3.38+01	7.02+00
DN/DLOGD (NO. PARTICLES/DNCM)	3.80+05	-1.09+08	2.42+07	3.68+08	6.56+09	9.98+10	9.29+11	7.31+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

'1 RUN 5B U OF W -R- ,OUTLET OF ESP, 7/15/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = N_2 = 78.10 O_2 = 17.30 H_2O = 2.39

CALC. MASS LOADING = 1.8047-02 GR/ACF 2.7072-02 GR/DNCF 4.1298+01 MG/ACM 6.1950+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	R
D50 (MICROMETERS)	9.29	9.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	4.74	3.44	1.64	1.64	2.71	3.09	3.27	.52
MG/DSCM/STAGE	1.41+01	1.03+01	4.89+00	4.89+00	8.08+00	9.22+00	9.75+00	1.55+00
CUM. PERCENT OF MASS SMALLER THAN D50	77.49	61.15	53.35	45.56	32.69	18.01	2.48	
CUM. (MG/ACM) SMALLER THAN D50	3.20+01	2.53+01	2.20+01	1.88+01	1.35+01	7.44+00	1.02+00	
CUM. (MG/DNCM) SMALLER THAN D50	4.80+01	3.79+01	3.31+01	2.82+01	2.03+01	1.12+01	1.53+00	
CUM. (GR/ACF) SMALLER THAN D50	1.40-02	1.10-02	9.63-03	8.22-03	5.90-03	3.25-03	4.47-04	
CUM. (GR/DNCF) SMALLER THAN D50	2.10-02	1.66-02	1.44-02	1.23-02	8.85-03	4.88-03	6.70-04	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	1.93+01	-3.85+02	1.35+01	1.34+01	3.96+01	2.89+01	3.16+01	5.15+00
DN/DLOGD (NO. PARTICLES/DNCM)	1.42+06	-3.22+08	3.40+07	4.44+08	9.41+09	4.19+10	3.99+11	5.37+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 6A U OF W -A- ,OUTLET OF ESP, 7/18/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 255.0 F = 123.9 C SAMPLING DURATION = 45.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 255.0 F = 123.9 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.2860-02 GR/ACF 1.9927-02 GR/DNCF 2.9429+01 MG/ACM 4.4454+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.31	9.90	4.29	1.85	1.15	.55	.27	
MASS (MILLIGRAMS)	4.50	.90	.00	.33	1.54	2.21	1.38	.89
MG/DSCM/STAGE	1.80+01	1.60+00	0.00	1.32+00	6.17+00	8.85+00	5.53+00	3.56+00
CUM. PERCENT OF MASS SMALLER THAN D50	60.00	56.45	54.45	53.52	39.83	20.18	7.92	
CUM. (MG/ACM) SMALLER THAN D50	1.77+01	1.66+01	1.66+01	1.57+01	1.17+01	5.94+00	2.33+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.67+01	2.51+01	2.51+01	2.38+01	1.77+01	8.97+00	3.52+00	
CUM. (GR/ACF) SMALLER THAN D50	7.72-03	7.26-03	7.26-03	6.88-03	5.12-03	2.60-03	1.02-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.17-02	1.10-02	1.10-02	1.04-02	7.74-03	3.92-03	1.54-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.60+00	6.51+00	2.81+00	1.96+00	7.99-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	2.47+01	-6.01+01	0.00	3.61+00	3.02+01	2.77+01	1.79+01	1.18+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.81+06	-9.99+07	0.00	1.19+08	7.14+09	9.00+10	2.26+11	1.23+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 4B U OF W -B- ,OUTLET OF ESP, 7/18/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 253.0 F = 122.8 C SAMPLING DURATION = 45.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 253.0 F = 122.8 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.49 CO = .80 N2 = 78.10 O2 = 17.30 H2O = 2.30

CALC. MASS LOADING = 8.8022-03 GR/ACF 1.3260-02 GR/DNCF 2.0192+01 MG/ACM 3.0342+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.30	9.89	4.28	1.89	1.15	.55	.27	
MASS (MILLIGRAMS)	3.24	.00	.00	.00	.91	.67	1.17	1.71
MG/DSCM/STAGE	1.29+01	0.00	0.00	0.00	3.63+00	2.68+00	4.67+00	6.83+00
CUM. PERCENT OF MASS SMALLER THAN D50	57.93	57.93	57.93	57.93	46.11	37.41	22.21	
CUM. (MG/ACM) SMALLER THAN D50	1.17+01	1.17+01	1.17+01	1.17+01	9.29+00	7.53+00	4.47+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.76+01	1.76+01	1.76+01	1.76+01	1.40+01	1.14+01	6.74+00	
CUM. (GR/ACF) SMALLER THAN D50	5.10-03	5.10-03	5.10-03	5.10-03	4.06-03	3.29-03	1.96-03	
CUM. (GR/DNCF) SMALLER THAN D50	7.68-03	7.68-03	7.68-03	7.68-03	6.11-03	4.96-03	2.95-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.59+00	6.51+00	2.81+00	1.46+00	7.98-01	3.87-01	1.97-01
DM/DLOGD (MG/DNCM)	1.77+01	0.00	0.00	0.00	1.78+01	8.39+00	1.51+01	2.27+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.30+06	0.00	0.00	0.00	9.22+09	1.21+10	1.91+11	2.36+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 7A U OF W -A- ,OUTLET OF ESP, 7/19/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 7.9220-03 GR/ACF 1.2218-02 GR/DNCF 1.8128+01 MG/ACM 2.7960+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.37	9.96	4.31	1.86	1.16	.56	.27	
MASS (MILLIGRAMS)	2.47	.93	.00	.45	1.25	2.35	1.96	.33
MG/DSCM/STAGE	7.58+00	2.85+00	0.00	1.38+00	3.83+00	7.21+00	6.98+00	1.01+00
CUM. PERCENT OF MASS SMALLER THAN D50	73.27	63.21	63.21	58.39	49.81	19.38	3.58	
CUM. (MG/ACM) SMALLER THAN D50	1.33+01	1.15+01	1.15+01	1.06+01	8.12+00	3.51+00	6.98-01	
CUM. (MG/DNCM) SMALLER THAN D50	2.06+01	1.77+01	1.77+01	1.63+01	1.25+01	5.42+00	1.08+00	
CUM. (GR/ACF) SMALLER THAN D50	5.80-03	5.01-03	5.01-03	4.62-03	3.55-03	1.54-03	2.83-04	
CUM. (GR/DNCF) SMALLER THAN D50	8.95-03	7.72-03	7.72-03	7.13-03	5.48-03	2.37-03	4.37-04	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.68+00	6.56+00	2.83+00	1.47+00	8.02-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	1.04+01	-1.07+02	0.00	3.77+00	1.87+01	2.25+01	1.44+01	3.34+00
DN/DLOGD (NO. PARTICLES/DNCM)	7.55+05	-8.71+07	0.00	1.22+08	9.36+09	3.21+10	1.91+11	3.50+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 78 U OF W -B- ,OUTLET OF ESP, 7/19/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 7.2618-03 GR/ACF 1.1200-02 GR/DNCF 1.6617+01 MG/ACM 2.5630+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.37	9.96	.31	1.84	1.16	.56	.27	
MASS (MILLIGRAMS)	.93	.96	.15	.61	1.99	1.99	9.98	.91
MG/DSCM/STAGE	1.32+00	1.91+00	4.60-01	1.87+00	6.10+00	5.95+00	2.11+00	1.26+00
CUM. PERCENT OF MASS SMALLER THAN $D50_n$	94.93	89.60	8.73	80.52	57.03	34.13	4.85	
CUM. (MG/ACM) SMALLER THAN D50	1.58+01	1.49+01	1.46+01	1.34+01	9.48+00	5.67+00	8.05-01	
CUM. (MG/DNCM) SMALLER THAN D50	2.43+01	2.29+01	2.25+01	2.06+01	1.46+01	8.75+00	1.24+00	
CUM. (GR/ACF) SMALLER THAN D50	6.89-03	6.50-03	6.37-03	5.85-03	4.14-03	2.48-03	3.52-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.06-02	1.00-02	9.83-03	9.02-03	6.39-03	3.82-03	5.43-04	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.66+00	6.56+00	2.83+00	1.47+00	8.02-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	1.81+00	-5.29+01	1.27+00	5.11+00	2.98+01	1.86+01	2.45+01	9.18+00
DN/DLOGD (NO. PARTICLES/DNCM)	1.31+05	-9.31+07	3.30+06	1.66+08	6.94+09	2.65+10	3.07+11	9.35+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

I RUN 8A U OF W -A- ,OUTLET OF ESP, 7/20/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 260.0 F = 126.7 C SAMPLING DURATION = 62.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 260.0 F = 126.7 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 5n.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.49 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 8.6538-03 GR/ACF 1.3169-02 GR/DNCF 1.9803+01 MG/ACM 3.0129+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.33	9.92	4.30	1.85	1.16	.55	.27	
MASS (MILLIGRAMS)	1.15	.80	.66	.87	2.08	2.98	1.89	.00
MG/DSCM/STAGE	3.37+00	2.34+00	1.93+00	2.55+00	6.09+00	8.72+00	5.53+00	0.00
CUM. PERCENT OF MASS SMALLER THAN $D50$	88.98	81.31	74.98	66.69	46.70	18.13	.01	
CUM. (MG/ACM) SMALLER THAN D50	1.76+01	1.61+01	1.48+01	1.32+01	9.24+00	3.59+00	9.90-04	
CUM. (MG/DNCM) SMALLER THAN D50	2.68+01	2.45+01	2.26+01	2.01+01	1.41+01	5.46+00	1.51-03	
CUM. (GR/ACF) SMALLER THAN D50	7.70-03	7.04-03	6.49-03	5.77-03	4.04-03	1.57-03	4.33-07	
CUM. (GR/DNCF) SMALLER THAN D50	1.17-02	1.07-02	9.87-03	8.77-03	6.15-03	2.39-03	6.58-07	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.62+00	6.53+00	2.82+00	1.46+00	8.00-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	9.62+00	-8.78+01	5.32+00	6.96+00	2.98+01	2.73+01	1.78+01	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	3.37+05	-7.25+07	1.90+07	2.28+08	7.00+09	3.92+10	2.25+11	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN RR U OF W -R- ,OUTLET OF ESP, 7/20/77 PROBE CATCH IN

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 260.0 F = 126.7 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.7 IN. OF HG STACK TEMPERATURE = 260.0 F = 126.7 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50. MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.9335-02 GR/ACF 2.1806-02 GR/DNCF 3.2803+01 MG/ACM 9.9900+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.33	9.92	4.30	1.85	1.14	.55	.27	
MASS (MILLIGRAMS)	3.52	.50	.53	1.11	3.76	3.52	2.73	1.55
MG/DSCM/STAGE	1.06+01	1.51+00	1.60+00	3.36+00	9.86+00	1.06+01	8.26+00	4.69+00
CUM. PERCENT OF MASS SMALLER THAN $D50$	78.95	78.96	72.79	66.15	46.66	25.60	9.28	
CUM. (MG/ACM) SMALLER THAN D50	2.59+01	2.99+01	2.39+01	2.17+01	1.53+01	8.90+00	3.04+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.94+01	3.79+01	3.63+01	3.30+01	2.33+01	1.28+01	4.63+00	
CUM. (GR/ACF) SMALLER THAN D50	1.13-02	1.09-02	1.04-02	9.48-03	6.69-03	3.67-03	1.33-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.72-02	1.66-02	1.59-02	1.44-02	1.02-02	5.58-03	2.02-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.62+00	6.83+00	2.82+00	1.46+00	8.00-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	1.46+01	-5.67+01	4.41+00	9.18+00	4.83+01	3.39+01	2.66+01	1.56+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.07+06	-4.68+07	1.17+07	3.01+08	1.13+10	4.78+10	3.36+11	1.62+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 9A U OF W IMPACTOR A, OUTLET OF ESP, 7/21/77

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 260.0 F = 126.7 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 260.0 F = 126.7 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.9558-02 GR/ACF 2.2195+02 GR/DNCF 3.3313+01 MG/ACM 5.0676+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.33	9.92	4.30	1.85	1.16	.55	.27	
MASS (MILLIGRAMS)	5.44	1.02	.49	.98	2.40	3.23	2.29	1.13
MG/DSCM/STAGE	1.65+01	3.09+00	1.48+00	2.96+00	7.26+00	9.77+00	6.93+00	3.42+00
CUM. PERCENT OF MASS SMALLER THAN $D50_i$	67.97	61.96	59.07	53.30	39.17	20.15	6.66	
CUM. (MG/ACM) SMALLER THAN D50	2.26+01	2.06+01	1.97+01	1.78+01	1.30+01	6.71+00	2.22+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.44+01	3.14+01	2.99+01	2.70+01	1.98+01	1.02+01	3.37+00	
CUM. (GR/ACF) SMALLER THAN D50	9.89-03	9.02-03	8.60-03	7.76-03	5.70-03	2.93-03	9.70-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.51-02	1.37-02	1.31-02	1.18-02	8.67-03	4.46-03	1.47-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.62+00	6.53+00	2.82+00	1.46+00	8.00-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	2.26+01	-1.16+02	9.08+00	8.10+00	3.55+01	3.06+01	2.23+01	1.14+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.65+06	-9.55+07	1.08+07	2.66+08	8.35+09	9.39+10	2.82+11	1.18+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 9R U OF W IMPACTOR B, OUTLET OF ESP, 7/21/77

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 7.30

CALC. MASS LOADING = 1.0597-02 GR/ACF 1.6399+02 GR/DNCF 2.9299+01 MG/ACM 3.7401+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.37	9.96	4.31	1.86	1.16	.56	.27	
MASS (MILLIGRAMS)	3.18	.16	.17	.96	2.45	2.19	39	1.36
MG/DSCM/STAGE	9.79+00	4.91-01	5.21-01	1.91+00	7.51+00	6.72+00	7.33+00	4.17+00
CUM. PERCENT OF MASS SMALLER THAN D50	74.28	72.98	71.61	67.89	48.06	30.39	11.01	
CUM. (MG/ACM) SMALLER THAN D50	1.80+01	1.77+01	1.74+01	1.65+01	1.17+01	7.36+00	2.67+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.78+01	2.73+01	2.68+01	2.54+01	1.80+01	1.13+01	4.12+00	
CUM. (GR/ACF) SMALLER THAN D50	7.87-03	7.73-03	7.59-03	7.19-03	5.09-03	3.22-03	1.17-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.21-02	1.19-02	1.17-02	1.11-02	7.86-03	4.96-03	1.80-03	
GEO. MEAN DIA. (MICROMETERS)	2.16+01	9.66+00	6.56+00	2.83+00	1.97+00	8.02-01	3.88-01	1.92-01
DM/DLOGD (MG/DNCM)	1.34+01	-1.84+01	1.93+00	3.85+00	3.67+01	2.10+01	2.36+01	1.39+01
DN/DLOGD (NO. PARTICLES/DNCM)	9.72+05	-1.50+07	3.79+06	1.25+08	8.54+09	2.99+10	2.96+11	1.99+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 108 U OF W IMPACTOR At OUTLET OF ESP: 7/22/77

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 50.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO_2 = 1.99 CO = .80 N_2 = 78.10 O_2 = 17.30 H_2O = 2.30

CALC. MASS LOADING = 1.8185-02 GR/ACF 2.7278-02 GR/DNCF 4.1612+01 MG/ACM 6.2421+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D_{50} (MICROMETERS)	9.29	9.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	10.82	.67	.83	.97	2.10	2.09	2.69	1.04
MG/DSCM/STAGE	3.23+01	2.00+00	2.48+00	2.89+00	6.26+00	6.23+00	8.02+00	3.10+00
CUM. PERCENT OF MASS SMALLER THAN D_{50}	98.99	95.83	91.92	37.35	27.99	17.59	9.91	
CUM. (MG/ACM) SMALLER THAN D_{50}	2.04+01	1.91+01	1.74+01	1.55+01	1.14+01	7.32+00	2.04+00	
CUM. (MG/DNCM) SMALLER THAN D_{50}	3.06+01	2.86+01	2.62+01	2.33+01	1.71+01	1.10+01	3.06+00	
CUM. (GR/ACF) SMALLER THAN D_{50}	8.91-03	8.33-03	7.62-03	6.79-03	4.99-03	3.20-03	8.93-04	
CUM. (GR/DNCF) SMALLER THAN D_{50}	1.34-02	1.25-02	1.14-02	1.02-02	7.49-03	4.80-03	1.34-03	
GEO. MEAN DIA. (MICROMETERS)	2.15+01	9.58+00	6.50+00	2.81+00	1.46+00	7.98-01	3.87-01	1.92-01
DM/DLOGD (MG/DNCM)	9.91+01	-7.99+01	6.81+00	7.91+00	3.07+01	1.96+01	2.60+01	1.03+01
DN/DLOGD (NO. PARTICLES/DNCM)	3.24+06	-6.27+07	1.82+07	2.63+08	7.29+09	2.83+10	3.29+11	1.07+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 UNIV. OF WASH. IMPACTOR RUN 148

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 67.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.47 CO = .79 N2 = 76.30 O2 = 16.90 H2O = 2.30

CALC. MASS LOADING = 2.9581-03 GR/ACF 1.4038-02 GR/DNCF 2.2788+01 MG/ACM 3.6182+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	A
D50 (MICROMETERS)	9.28	4.87	4.29	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	3.40	.78	.64	.74	2.08	2.10	2.15	1.58
MG/DSCM/STAGE	9.08+00	7.48-01	1.71+00	1.98+00	5.56+00	5.61+00	5.74+00	4.22+00
CUM. PERCENT OF MASS SMALLER THAN D50	73.79	71.63	66.79	60.99	44.95	28.76	12.19	
CUM. (MG/ACM) SMALLER THAN D50	1.68+01	1.63+01	1.52+01	1.39+01	1.02+01	6.55+00	2.78+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.52+01	2.45+01	2.28+01	2.08+01	1.54+01	9.83+00	4.17+00	
CUM. (GR/ACF) SMALLER THAN D50	7.35-03	7.13-03	6.64-03	6.07-03	4.48-03	2.86-03	1.21-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.10-02	1.07-02	9.96-03	9.11-03	6.72-03	4.30-03	1.82-03	
GEO. MEAN DIA. (MICROMETERS)	1.36+01	9.57+00	6.59+00	2.81+00	1.46+00	7.96-01	3.84-01	1.91-01
DN/DLOGD (MG/DNCM)	2.72+01	-2.80+01	4.70+00	5.40+00	2.72+01	1.76+01	4.85+01	1.40+01
DN/DLOGD (NO. PARTICLES/DNCM)	7.91+06	-2.35+07	1.26+07	1.80+08	6.48+09	2.56+10	2.37+11	1.48+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 UNIV. OF WASH. IMPACTOR RUN 11A

IMPACTOR FLOWRATE = .333 ACFM IMPACTOR TEMPERATURE = 270.0 F = 132.2 C SAMPLING DURATION = 15.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 270.0 F = 132.2 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.47 CO = .78 N2 = 76.70 O2 = 16.90 H2O = 2.30

CALC. MASS LOADING = 1.126E-02 GR/ACF 1.734E-02 GR/DNCF 2.574E+01 MG/ACM 3.970E+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	8.37	5.06	4.31	3.66	1.16	.55	.27	
MASS (MILLIGRAMS)	.45	.36	.28	.30	.39	.68	.37	.43
MG/DSCM/STAGE	5.52+00	4.66+00	3.64+00	3.88+00	4.78+00	8.34+00	4.54+00	5.28+00
CUM. PERCENT OF MASS SMALLER THAN D50	86.29	74.70	64.16	57.02	45.13	24.40	13.11	
CUM. (MG/ACM) SMALLER THAN D50	2.22+01	1.92+01	1.70+01	1.47+01	1.16+01	6.28+00	3.38+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.43+01	2.97+01	2.63+01	2.26+01	1.79+01	9.69+00	5.21+00	
CUM. (GR/ACF) SMALLER THAN D50	9.71-03	8.40-03	7.44-03	6.41-03	5.08-03	2.74-03	1.48-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.50-02	1.30-02	1.15-02	9.89-03	7.83-03	4.23-03	2.28-03	
GEO. MEAN DIA. (MICROMETERS)	1.37+01	9.66+00	6.55+00	2.83+00	1.47+00	8.01-01	3.87-01	1.91-01
DM/DLOGD (MG/DNCM)	1.68+01	1.35+02	9.45+00	1.01+01	2.34+01	2.61+01	1.45+01	1.75+01
DN/DLOGD (NO. PARTICLES/DNCM)	4.80+06	1.42+08	2.47+07	3.26+08	5.45+09	3.72+10	1.85+11	1.85+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760 MM HG.

1 UNIV. OF WASH. IMPACTOR RUN 11R

IMPACTOR FLOWRATE = .700 ACFM — IMPACTOR TEMPERATURE = 250.0 F = 121.1 C — SAMPLING DURATION = 15.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG — STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. — STACK PRESSURE = 27.00 IN. OF HG — MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) — CO2 = 1.47 — CO = .78 — N2 = 76.50 — O2 = 16.90 — H2O = 2.30

CALC. MASS LOADING = 1.3546-02 GR/ACF — 2.0820-02 GR/DNCF — 3.0098+01 MG/ACM — 4.6460+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.28	8.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	.57	.56	.45	.38	.45	.60	.55	.39
MG/DNCM/STAGE	6.80+00	6.68+00	5.37+00	4.53+00	5.37+00	7.14+00	6.56+00	4.65+00
CUM. PERCENT OF MASS SMALLER THAN D50	85.57	71.40	60.00	50.38	38.09	23.80	9.88	
CUM. (MG/ACM) SMALLER THAN D50	2.65+01	2.21+01	1.86+01	1.56+01	1.21+01	7.3?+00	3.06+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.98+01	3.32+01	2.79+01	2.34+01	1.81+01	1.11+01	4.59+00	
CUM. (GR/ACF) SMALLER THAN D50	1.16-02	9.67-03	8.13-03	6.83-03	5.28-03	3.22-03	1.34-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.74-02	1.45-02	1.22-02	1.02-02	7.92-03	4.84-03	2.01-03	
GEO. MEAN DIA. (MICHOMETERS)	1.36+01	9.57+00	6.50+00	2.81+00	1.46+00	7.96-01	3.86-01	1.91-01
DM/DLOGD (MG/DNCM)	2.04+01	-2.50+02	1.48+01	1.24+01	2.63+01	2.24+01	2.12+01	1.55+01
DN/DLOGD (NO. PARTICLES/DNCM)	5.92+06	-2.10+08	3.96+07	4.12+08	6.26+09	3.26+10	2.71+11	1.63+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 UNIV. OF WASH. IMPACTOR RUN 12A

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.67 CO = .78 N2 = 76.70 O2 = 16.90 H2O = 2.30

CALC. MASS LOADING = 1.172-02 GR/ACF 1.661E-02 GR/DNCF 2.574E+01 MG/ACM 3.802E+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.28	6.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	1.92	.21	.10	.48	.61	1.42	1.08	.64
MG/DSCM/STAGE	1.15+01	1.25+00	5.97-01	2.86+00	3.64+00	8.47+00	6.44+00	3.82+00
CUM. PERCENT OF MASS SMALLER THAN D50	70.28	67.03	65.48	58.05	48.61	26.63	9.91	
CUM. (MG/ACM) SMALLER THAN D50	1.78+01	1.70+01	1.66+01	1.47+01	1.23+01	6.75+00	2.51+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.67+01	2.55+01	2.49+01	2.21+01	1.85+01	1.01+01	3.77+00	
CUM. (GR/ACF) SMALLER THAN D50	7.79-03	7.43-03	7.25-03	6.43-03	5.38-03	2.95-03	1.10-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.17-02	1.11-02	1.09-02	9.65-03	8.08-03	4.42-03	1.65-03	
GEO. MEAN DIA. (MICROMETERS)	1.36+01	9.57+00	6.50+00	2.81+00	1.46+00	7.96-01	3.86-01	1.91-01
DM/DLOGD (MG/DNCM)	3.44+01	4.70+01	1.64+00	7.83+00	1.78+01	2.65+01	2.08+01	1.27+01
DN/DLOGD (NO. PARTICLES/DNCM)	9.98+06	-3.93+07	4.60+06	2.60+08	4.25+09	3.84+10	2.66+11	1.34+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 UNIV. OF WASH. IMPACTOR RUN 12H

IMPACTOR FLOWRATE = .300 ACFM | IMPACTOR TEMPERATURE = 250.0 F = 121.1 C | SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 1.2 IN. OF HG | STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. | STACK PRESSURE = 27.00 IN. OF HG | MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 1.47 CO = .78 N2 = 76.30 O2 = 16.90 H2O = 2.30

CALC. MASS LOADING = 9.5681+03 GR/ACF 1.4353-02 GR/DNCF 2.1895+01 MG/ACM 3.2844+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.28	6.87	4.28	1.84	1.15	.55	.27	
MASS (MILLIGRAMS)	1.77	.14	.32	.07	.76	1.23	.62	.67
MG/DSCM/STAGE	1.06+01	8.35-01	1.91+00	4.18-01	4.53+00	7.34+00	3.70+00	4.00+00
CUM. PERCENT OF MASS SMALLER THAN D50	68.28	65.78	60.04	58.79	45.17	23.12	12.04	
CUM. (MG/ACM) SMALLER THAN D50	1.50+01	1.44+01	1.31+01	1.29+01	9.89+00	5.06+00	2.63+00	
CUM. (MG/DNCM) SMALLER THAN D50	2.24+01	2.14+01	1.97+01	1.93+01	1.48+01	7.59+00	3.95+00	
CUM. (GR/ACF) SMALLER THAN D50	6.53-03	6.29-03	5.74-03	5.62-03	4.32-03	2.21-03	1.15-03	
CUM. (GR/DNCF) SMALLER THAN D50	9.80-03	9.44-03	8.62-03	8.44-03	6.48-03	3.32-03	1.72-03	
GEO. MEAN DIA. (MICROMETERS)	1.36+01	9.57+00	6.59+00	2.81+00	1.46+00	7.96-01	3.86-01	1.91-01
DX/DLOGD (MG/DNCM)	3.17+01	1.13+01	5.25+00	1.14+00	2.22+01	2.30+01	1.10+01	1.33+01
DN/DLOGD (NO. PARTICLES/DNCM)	9.20+06	2.62+07	1.41+07	3.80+07	5.29+09	3.34+10	1.53+11	1.40+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

B-65

1 RUN 13A UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.35 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 9.00

CALC. MASS LOADING = 1.2077-02 GR/ACF 1.9175-02 GR/DNCF 2.7545+01 MG/ACM 4.3879+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.79	1.12	.54	.22	
MASS (MILLIGRAMS)	1.43	.13	.47	.52	1.23	1.65	1.59	.00
MG/DSCM/STAGE	9.06+00	8.24-01	2.98+00	3.29+00	7.79+00	1.05+01	1.01+01	0.00
CUM. PERCENT OF MASS SMALLER THAN D50	79.63	77.78	71.09	63.68	46.16	22.65	.01	
CUM. (MG/ACM) SMALLER THAN D50	2.19+01	2.14+01	1.96+01	1.75+01	1.27+01	6.24+00	1.38-03	
CUM. (MG/DNCM) SMALLER THAN D50	3.49+01	3.41+01	3.12+01	2.79+01	2.03+01	9.94+00	2.19-03	
CUM. (GR/ACF) SMALLER THAN D50	9.59-03	9.36-03	8.56-03	7.67-03	5.56-03	2.73-03	6.02-07	
CUM. (GR/DNCF) SMALLER THAN D50	1.53-02	1.49-02	1.36-02	1.22-02	8.85-03	4.34-03	9.59-07	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DN/DLOGD (MG/DNCM)	2.62+01	-3.09+01	1.19+00	9.00+00	3.81+01	3.28+01	2.67+01	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	7.94+06	-2.83+07	2.40+07	3.27+08	9.94+09	5.21+10	4.70+11	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 138 UNIV. OF WASH. IMPACTOR, OUTLET OF SIP

IMPACTOR FLOWRATE = .305 ACFM IMPACTOR TEMPERATURE = 235.0 F = 112.8 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 235.0 F = 112.8 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.60 O2 = 9.60 H2O = 9.00

CALC. MASS LOADING = 9.8404-02 GR/ACF 1.6347-02 GR/DNCF 3.3523+01 MG/ACM 3.5120+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.65	9.52	4.12	1.78	1.11	.53	.22	
MASS (MILLIGRAMS)	.57	.19	.18	.26	1.20	1.50	.35	.78
MG/DSCM/STAGE	7.53+00	1.17+00	1.12+00	1.61+00	3.37+00	9.07+00	5.27+00	4.84+00
CUM. PERCENT OF MASS SMALLER THAN D50	30.07	85.70	33.63	79.10	55.58	28.40	13.59	
CUM. (MG/ACM) SMALLER THAN D50	2.03+01	1.97+01	1.83+01	1.78+01	1.25+01	6.80+00	3.06+00	
CUM. (MG/DNCM) SMALLER THAN D50	7.15+01	3.05+01	2.34+01	2.78+01	1.95+01	9.97+00	4.77+00	
CUM. (GR/ACF) SMALLER THAN D50	8.87-03	8.59-03	8.23-03	7.79-03	5.47-03	2.98-03	1.34-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.38-02	1.37-02	1.28-02	1.21-02	8.53-03	4.36-03	2.09-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.27+00	6.20+00	2.71+00	1.48+00	7.03-01	3.46-01	1.59-01
DM/DLOG (MG/DNCM)	1.01+01	-4.47+01	3.07+00	4.41+00	4.19+01	3.04+01	1.40+01	1.61+01
DN/DLOG (NO. PARTICLES/LNCM)	3.11+00	-4.17+07	9.19+06	1.04+09	1.03+10	4.00+10	2.40+11	2.34+12

NORMAL (ENGINEERING STANDARD) CONDITIONS 32F 01 DEG C AND 760MM HG.

1 RUN 19A UNIV. OF WASH. IMPACTOR. OUTLET OF ESP

IMPACTOR FLOWRATE = .350 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.68 O2 = 9.00 H2O = 8.00

CALC. MASS LOADING = 9.8105-03 GR/ACF 7.3478-03 GR/DNCF 1.6850+01 MG/ACM 1.6814+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.11	3.58	4.15	1.79	1.12	.54	.22	
MASS (MILLIGRAMS)	1.96	.03	.00	.00	.52	1.41	.34	.57
MG/DSCM/STAGE	8.21+00	2.52-01	0.00	0.00	1.65+00	4.47+00	2.66+00	1.81+00
CUM. PERCENT OF MASS SMALLER THAN D50	63.57	63.09	62.09	62.09	52.42	28.21	10.60	
CUM. (MG/ACM) SMALLER THAN D50	8.71+00	8.55+00	8.55+00	8.55+00	5.53+00	2.77+00	1.12+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.07+01	1.04+01	1.04+01	1.04+01	6.81+00	3.41+00	1.38+00	
CUM. (GR/ACF) SMALLER THAN D50	3.83-03	3.80-03	3.80-03	3.80-03	2.42-03	1.21-03	4.89-04	
CUM. (GR/DNCF) SMALLER THAN D50	4.67-03	4.65-03	4.65-03	4.65-03	3.85-03	1.48-03	7.79-04	
GEO. MEAN DIA. (MICROMETERS)	1.30+01	6.20+00	5.31+00	2.72+00	1.41+00	7.72-01	3.47-01	1.53-01
DM/DLOGD (MG/DNCM)	1.73+01	-3.52+00	0.00	0.00	8.26+00	1.40+01	7.05+00	6.00+00
DN/DLOGD (NO. PARTICLES/DNCM)	5.44+05	-2.72+05	0.00	0.00	2.10+09	2.22+10	1.24+11	1.10+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21.000 C AND 760MM HG.

1 RUN 148 UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.60 O2 = 9.00 H2O = 8.00

CALC. MASS LOADING = 4.912E-03 GR/ACF 7.8258-03 GR/DNCF 1.1242+01 MG/ACM 1.7908+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	4.58	2.15	1.73	1.12	.59	.22	
MASS (MILLIGRAMS)	1.17	.28	.27	.21	1.10	1.12	.65	.93
MG/DSCM/STAGE	3.71+00	8.87-01	8.55-01	6.65-01	3.48+00	3.55+00	2.06+00	2.95+00
CUM. PERCENT OF MASS SMALLER THAN D50	79.53	74.70	69.09	60.32	47.13	27.58	16.29	
CUM. (MG/ACM) SMALLER THAN D50	8.95+00	8.40+00	7.87+00	7.46+00	5.30+00	3.10+00	1.83+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.43+01	1.34+01	1.25+01	1.19+01	8.44+00	4.94+00	2.91+00	
CUM. (GR/ACF) SMALLER THAN D50	3.91-03	3.67-03	3.44-03	3.26-03	2.32-03	1.35-03	7.98-04	
CUM. (GR/DNCF) SMALLER THAN D50	6.23-03	5.85-03	5.49-03	5.19-03	3.69-03	2.16-03	1.27-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.20+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	1.07+01	-1.32+01	2.15+00	1.32+00	1.71+01	1.11+01	5.46+00	9.79+00
DN/DLOGD (NO. PARTICLES/DNCM)	3.25+06	-3.04+07	6.89+06	6.61+07	9.44+09	1.77+10	9.62+10	1.80+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 15A UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.68 O2 = 9.60 H2O = 8.00

CALC. MASS LOADING = 1.8090-03 GR/ACF 2.8817-03 GR/DNCF 4.1397+00 MG/ACM 6.5944+00 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	9.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	.90	.20	.00	.00	.00	.00	.75	.26
MG/DSCM/STAGE	2.85+00	6.34-01	0.00	0.00	0.00	0.00	2.38+00	8.24-01
CUM. PERCENT OF MASS SMALLER THAN D50	57.35	47.87	47.87	47.87	47.87	47.87	12.33	
CUM. (MG/ACM) SMALLER THAN D50	2.37+00	1.98+00	1.98+00	1.98+00	1.98+00	1.98+00	5.10-01	
CUM. (MG/DNCM) SMALLER THAN D50	3.78+00	3.16+00	3.16+00	3.16+00	3.16+00	3.16+00	8.13-01	
CUM. (GR/ACF) SMALLER THAN D50	1.04-03	8.66-04	8.66-04	8.66-04	8.66-04	8.66-04	2.23-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.65-03	1.38-03	1.38-03	1.38-03	1.38-03	1.38-03	3.55-04	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	8.23+00	-1.37+01	0.00	0.00	0.00	0.00	6.30+00	2.74+00
DN/DLOGD (NO. PARTICLES/DNCM)	2.50+06	-2.17+07	0.00	0.00	0.00	0.00	1.11+11	5.02+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 150 UNIV. OF WASH. IMPACTOR. OUTLET OF ESP

IMPACTOR FLOWRATE = .335 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.00 CO = .00 N2 = 72.00 O2 = 9.00 H2O = 9.00

CALC. MASS LOADING = 6.9360-02 GR/ACF 1.1849-02 GR/DSCF 1.5872+01 MG/ACM 2.5284+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.61	5.58	4.15	1.79	1.12	.54	.22	
MASS (MILLIGRAMS)	2.62	.20	.06	.25	1.43	1.76	1.48	.29
MG/DSCM/STAGE	5.38+00	6.34-01	2.01	7.92-01	4.72+00	5.58+00	4.69+00	9.19-01
CUM. PERCENT OF MASS SMALLER THAN D50	57.62	65.15	65.19	62.66	43.64	21.88	3.59	
CUM. (MG/ACM) SMALLER THAN D50	1.07+01	1.03+01	1.03+01	9.85+00	6.93+00	3.47+00	5.70-01	
CUM. (MG/DNCM) SMALLER THAN D50	1.71+01	1.65+01	1.65+01	1.57+01	1.10+01	5.53+00	9.08-01	
CUM. (GR/ACF) SMALLER THAN D50	4.09-03	4.52-03	4.52-03	4.30-03	3.03-03	1.52-03	2.49-04	
CUM. (GR/DNCF) SMALLER THAN D50	7.47-03	7.20-03	7.20-03	6.86-03	4.82-03	2.42-03	3.97-04	
D50. MEAN DIA. (MICROMETERS)	1.24+01	9.20+00	6.21+00	2.72+00	1.41+00	7.72-01	3.47-01	1.59-01
DN/DLOGD (MG/DNCM)	3.40+01	-3.37+01	0.00	2.16+00	2.21+01	1.75+01	1.24+01	3.05+00
DN/DLOGD (NO. PARTICLES/DNCM)	7.23+06	-2.17+07	0.00	7.87+07	6.02+09	2.78+10	2.19+11	5.60+11

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 1GA UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 6.8503-03 GR/ACF 1.0012-02 GR/DNCF 1.5676+01 MG/ACM 2.4971+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	9.58	4.15	1.79	1.12	.54	.22	
MASS (MILLIGRAMS)	5.17	.28	.00	.01	.68	.36	.78	.71
MG/DSCM/STAGE	1.04+01	8.87-01	0.00	3.17-02	2.15+00	1.14+00	2.47+00	2.25+00
CUM. PERCENT OF MASS SMALLER THAN D50	35.30	31.79	31.79	31.67	23.16	18.65	8.89	
CUM. (MG/ACM) SMALLER THAN D50	5.53+00	4.98+00	4.98+00	4.96+00	3.63+00	2.92+00	1.39+00	
CUM. (MG/DNCM) SMALLER THAN D50	8.81+00	7.94+00	7.94+00	7.91+00	5.78+00	4.66+00	2.22+00	
CUM. (GR/ACF) SMALLER THAN D50	2.42-03	2.18-03	2.18-03	2.17-03	1.59-03	1.28-03	6.09-04	
CUM. (GR/DNCF) SMALLER THAN D50	3.85-03	3.47-03	3.47-03	3.46-03	2.53-03	2.04-03	9.70-04	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	4.73+01	-3.32+01	0.00	8.66-02	1.05+01	3.57+00	6.55+00	7.47+00
DN/DLOGD (NO. PARTICLES/DNCM)	1.44+07	-3.04+07	0.00	3.15+00	2.75+09	5.68+09	1.15+11	1.37+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 163 UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 251.0 F = 121.1 C SAMPLING DURATION = 60.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.35 CO = .00 N2 = 72.68 O2 = 9.60 H2O = 9.00

CALC. MASS LOADING = 3.2074-02 GR/ACF 5.1093-02 GR/DNCF 7.3395+01 MG/ACM 1.1692+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	35.80	.29	.70	.15	.50	1.14	.80	.99
MG/DSCM/STAGE	1.04+02	7.60-01	2.22+00	4.75-01	1.58+00	3.61+00	2.82+00	3.14+00
CUM. PERCENT OF MASS SMALLER THAN D50	12.33	11.69	9.82	9.41	8.08	5.03	2.05	
CUM. (MG/ACM) SMALLER THAN D50	9.05+00	8.58+00	7.20+00	6.91+00	5.93+00	3.69+00	1.95+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.44+01	1.37+01	1.15+01	1.10+01	9.44+00	5.88+00	3.10+00	
CUM. (GR/ACF) SMALLER THAN D50	3.95-03	3.75-03	3.15-03	3.02-03	2.59-03	1.61-03	8.50-04	
CUM. (GR/DNCF) SMALLER THAN D50	6.30-03	5.97-03	5.01-03	4.81-03	4.13-03	2.57-03	1.35-03	
D50. MEAN DIA. (MICROMETERS)	1.34+01	9.20+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	3.00+02	-2.35+01	6.10+00	1.30+00	7.75+00	1.13+01	7.47+00	1.04+01
DN/DLOGD (NO. PARTICLES/DNCM)	9.11+07	-2.51+07	1.79+07	9.72+07	2.02+09	1.80+10	1.32+11	1.91+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 17A UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 8.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.00 H2O = 8.00

CALC. MASS LOADING = 1.4695-02 GR/ACF 2.3409-02 GR/DNCF 3.3627+01 MG/ACM 5.3568+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	2.66	.65	.43	.50	1.14	2.00	.66	.53
MG/DSCM/STAGE	1.69+01	4.12+00	2.72+00	3.17+00	7.22+00	1.27+01	4.18+00	3.36+00
CUM. PERCENT OF MASS SMALLER THAN D50	68.97	61.38	56.36	50.53	37.23	13.89	6.19	
CUM. (MG/ACM) SMALLER THAN D50	2.32+01	2.06+01	1.90+01	1.70+01	1.25+01	4.67+00	2.08+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.63+01	3.23+01	3.02+01	2.71+01	1.99+01	7.44+00	3.32+00	
CUM. (GR/ACF) SMALLER THAN D50	1.01-02	9.02-03	8.28-03	7.43-03	5.47-03	2.04-03	9.10-04	
CUM. (GR/DNCF) SMALLER THAN D50	1.61-02	1.44-02	1.32-02	1.18-02	8.71-03	3.25-03	1.45-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	9.87+01	-1.54+02	7.50+00	8.66+00	3.53+01	3.97+01	1.11+01	1.12+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.48+07	-1.41+08	2.20+07	3.15+08	9.21+09	6.31+10	1.95+11	2.05+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 178 UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.35 CO = .00 N2 = 72.63 O2 = 9.00 H2O = 8.00

CALC. MASS LOADING = 1.3032-02 GR/ACF 2.0760-02 GR/DNCF 2.9821+01 MG/ACM 4.7505+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	1.29	.93	.28	.33	2.69	1.21	.73	.63
MG/DSCM/STAGE	7.86+00	2.72+00	1.77+00	2.47+00	1.70+01	7.67+00	4.63+00	3.99+00
CUM. PERCENT OF MASS SMALLER THAN D50	33.69	78.03	74.35	69.22	33.82	17.90	8.29	
CUM. (MG/ACM) SMALLER THAN D50	2.50+01	2.33+01	2.22+01	2.06+01	1.01+01	5.34+00	2.47+00	
CUM. (MG/DNCM) SMALLER THAN D50	3.98+01	3.71+01	3.53+01	3.29+01	1.61+01	8.50+00	3.94+00	
CUM. (GR/ACF) SMALLER THAN D50	1.09-02	1.02-02	9.69-03	9.02-03	4.41-03	2.33-03	1.08-03	
CUM. (GR/DNCF) SMALLER THAN D50	1.74-02	1.62-02	1.54-02	1.44-02	7.02-03	3.72-03	1.72-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.72-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	2.27+01	-1.02+02	4.38+00	6.75+00	8.34+01	2.40+01	1.23+01	1.33+01
DN/DLOGD (NO. PARTICLES/DNCM)	8.89+06	-9.35+07	1.43+07	2.46+08	2.17+10	3.82+10	2.16+11	2.43+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 18A UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.9 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 4.60 H2O = 8.00

CALC. MASS LOADING = 1.2037-02 GR/ACF 1.9175-02 GR/DNCF 2.7545+01 MG/ACM 4.3879+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.79	1.12	.54	.22	
MASS (MILLIGRAMS)	1.43	.13	.47	.62	1.23	1.65	1.59	.00
MG/DSCM/STAGE	9.06+00	8.24-01	2.98+00	3.29+00	7.79+00	1.05+01	1.01+01	0.00
CUM. PERCENT OF MASS SMALLER THAN D50	79.63	77.78	71.09	63.68	46.16	22.65	.01	
CUM. (MG/ACM) SMALLER THAN D50	2.19+01	2.14+01	1.96+01	1.75+01	1.27+01	6.24+00	1.38-03	
CUM. (MG/DNCM) SMALLER THAN D50	3.49+01	3.41+01	3.12+01	2.79+01	2.03+01	9.94+00	2.19-03	
CUM. (GR/ACF) SMALLER THAN D50	9.59-03	9.36-03	8.56-03	7.67-03	5.56-03	2.73-03	6.02-07	
CUM. (GR/DNCF) SMALLER THAN D50	1.53-02	1.49-02	1.36-02	1.22-02	8.85-03	4.34-03	9.59-07	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	2.62+01	-3.09+01	8.19+00	9.00+00	3.81+01	3.28+01	2.67+01	0.00
DN/DLOGD (NO. PARTICLES/DNCM)	7.94+06	-2.83+07	2.40+07	3.27+08	9.94+09	5.21+10	4.70+11	0.00

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 18B UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 4.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.36 CO = .00 N2 = 72.68 O2 = 9.60 H2O = 8.00

CALC. MASS LOADING = 2.114E-02 GR/ACF 3.368E-02 GR/DNCF 4.831E+01 MG/ACM 7.707E+01 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	3.58	1.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	7.33	.68	.31	.83	2.23	3.40	1.83	.72
MG/DSCM/STAGE	1.48+01	1.31+00	1.36+00	5.26+00	1.41+01	2.15+01	1.16+01	4.56+00
CUM. PERCENT OF MASS SMALLER THAN D50	81.11	75.59	73.08	66.35	48.26	20.69	5.89	
CUM. (MG/ACM) SMALLER THAN D50	3.92+01	3.65+01	3.54+01	3.21+01	2.33+01	1.00+01	2.83+00	
CUM. (MG/DNCM) SMALLER THAN D50	6.25+01	5.83+01	5.63+01	5.11+01	3.72+01	1.59+01	4.50+00	
CUM. (GR/ACF) SMALLER THAN D50	1.71-02	1.58-02	1.55-02	1.40-02	1.02-02	4.37-03	1.24-03	
CUM. (GR/DNCF) SMALLER THAN D50	2.73-02	2.55-02	2.46-02	2.23-02	1.63-02	6.97-03	1.97-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	9.26+01	-1.61+02	5.40+00	1.44+01	6.91+01	6.75+01	3.07+01	1.52+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.29+07	-1.48+08	1.58+07	5.23+08	1.80+10	1.07+11	5.41+11	2.78+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 13A UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 8.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.68 O2 = 9.60 H2O = 8.00

CALC. MASS LOADING = 5.0481-02 GR/ACF 0.0916-02 GR/DNCF 1.1552+02 MG/ACM 1.3402+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	9.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	19.99	.00	.03	1.32	3.29	2.81	1.09	.97
MG/DSCM/STAGE	1.23+02	0.00	3.36+00	8.36+00	2.08+01	1.78+01	6.79+00	6.15+00
CUM. PERCENT OF MASS SMALLER THAN D50	33.89	33.89	32.24	27.55	16.38	6.83	3.36	
CUM. (MG/ACM) SMALLER THAN D50	7.31+01	3.91+01	3.70+01	3.18+01	1.89+01	7.89+00	3.81+00	
CUM. (MG/DNCM) SMALLER THAN D50	9.23+01	9.23+01	5.30+01	5.07+01	3.01+01	1.26+01	6.07+00	
CUM. (GR/ACF) SMALLER THAN D50	1.71-02	1.71-02	1.52-02	1.39-02	8.27-03	3.45-03	1.67-03	
CUM. (GR/DNCF) SMALLER THAN D50	2.72-02	2.72-02	2.58-02	2.22-02	1.32-02	5.49-03	2.65-03	
D50, MEAN DIA. (MICROMETERS)	1.39+01	9.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	3.56+02	0.00	9.24+00	2.29+01	1.02+02	5.58+01	1.75+01	2.04+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.08+08	0.00	2.71+07	8.31+07	2.66+10	8.87+10	3.08+11	3.75+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

RUN 109 UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .350 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.00 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.35 CO = .00 N2 = 72.63 O2 = 9.00 H2O = 8.00

CALC. MASS LOADING = 8.9900-02 GR/ACF 7.1620-02 GR/DNCF 1.0288+02 MG/ACM 1.6389+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
DSD (MICROMETERS)	9.01	5.59	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	15.11	.00	.55	1.32	3.29	3.96	-.28	1.21
MG/DSCM/STAGE	9.57+01	0.00	3.48+00	8.36+00	2.08+01	2.19+01	8.11+00	7.67+00
CUM. PERCENT OF MASS SMALLER THAN DSD	42.38	42.38	40.28	35.25	22.70	9.50	4.62	
CUM. (MG/ACM) SMALLER THAN DSD	4.36+01	4.36+01	4.14+01	3.63+01	2.34+01	9.78+00	4.75+00	
CUM. (MG/DNCM) SMALLER THAN DSD	6.95+01	6.95+01	6.60+01	5.78+01	3.72+01	1.56+01	7.57+00	
CUM. (GR/ACF) SMALLER THAN DSD	1.91-02	1.91-02	1.81-02	1.58-02	1.02-02	4.27-03	2.08-03	
CUM. (GR/DNCF) SMALLER THAN DSD	3.04-02	3.04-02	2.88-02	2.52-02	1.63-02	6.81-03	3.31-03	
DSD, MEAN DIA. (MICROMETERS)	1.34+01	9.20+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	2.70+02	0.00	9.59+00	2.29+01	1.02+02	6.87+01	2.15+01	2.55+01
DN/DLOGD (NO. PARTICLES/DNCM)	8.39+07	0.00	2.81+07	8.31+08	2.60+10	1.09+11	3.79+11	4.67+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 20A UNIV. OF WASH. IMPACTOR. OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.00 CO = .00 N2 = 72.00 O2 = 9.00 H2O = 8.00

CALC. MASS LOADING = 6.5622-02 GR/ACF 1.0054-01 GR/DNCF 1.5017+02 MG/ACM 2.3921+02 MG/DNCM

IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	5.58	4.15	1.73	1.12	.59	.22	
MASS (MILLIGRAMS)	20.02	.37	1.89	2.51	5.02	4.15	1.80	1.90
MG/DSCM/STAGE	1.31+02	2.34+00	1.17+01	1.59+01	3.18+01	2.63+01	1.18+01	1.20+01
CUM. PERCENT OF MASS SMALLER THAN D50	46.12	45.16	40.35	33.79	20.07	9.83	4.07	
CUM. (MG/ACM) SMALLER THAN D50	6.93+01	6.78+01	6.06+01	5.07+01	3.10+01	1.48+01	7.96+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.10+02	1.08+02	9.65+01	8.08+01	4.95+01	2.35+01	1.19+01	
CUM. (GR/ACF) SMALLER THAN D50	3.03-02	2.90-02	2.65-02	2.22-02	1.36-02	6.45-03	3.26-03	
CUM. (GR/DNCF) SMALLER THAN D50	4.82-02	4.70-02	4.22-02	3.53-02	2.16-02	1.03-02	5.20-03	
GEO. MEAN DIA. (MICROMETERS)	1.34+01	3.23+00	9.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DM/DLOGD (MG/DNCM)	3.77+02	-3.79+01	3.21+01	4.35+01	1.56+02	8.29+01	3.12+01	4.00+01
DN/DLOGD (NO. PARTICLES/DNCM)	1.15+08	-8.09+07	9.90+07	1.58+08	4.86+10	1.31+11	5.50+11	7.39+12

NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

1 RUN 208 UNIV. OF WASH. IMPACTOR, OUTLET OF ESP

IMPACTOR FLOWRATE = .300 ACFM IMPACTOR TEMPERATURE = 250.0 F = 121.1 C SAMPLING DURATION = 30.00 MIN

IMPACTOR PRESSURE DROP = 9.5 IN. OF HG STACK TEMPERATURE = 250.0 F = 121.1 C

ASSUMED PARTICLE DENSITY = 2.60 GM/CU.CM. STACK PRESSURE = 27.00 IN. OF HG MAX. PARTICLE DIAMETER = 20.0 MICROMETERS

GAS COMPOSITION (PERCENT) CO2 = 7.30 CO = .00 N2 = 72.68 O2 = 9.60 H2O = 8.00

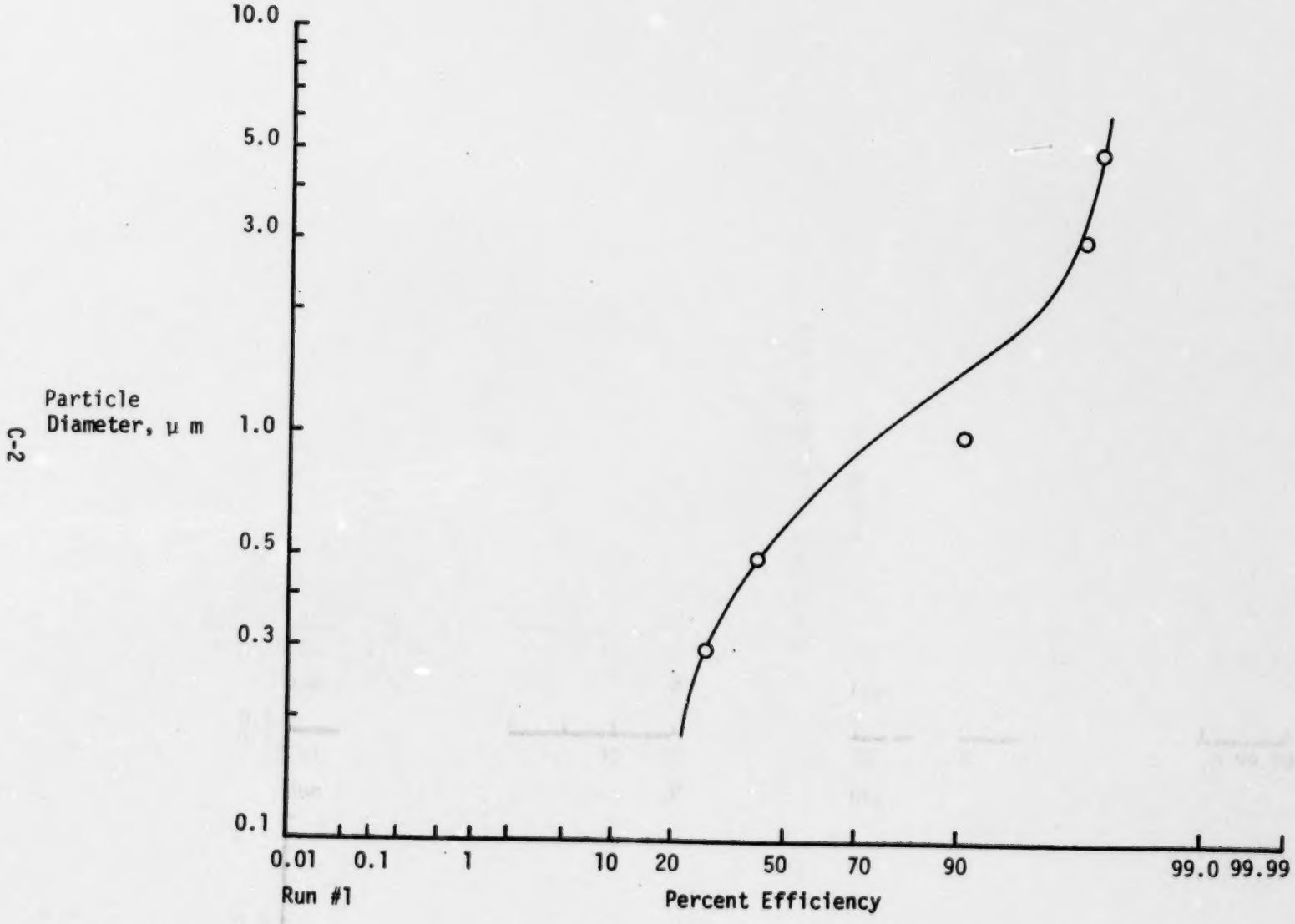
CALC. MASS LOADING = 5.2899-02 GR/ACF 8.9267-02 GR/DNCF 1.2105+02 MG/ACM 1.9283+02 MG/DNCM

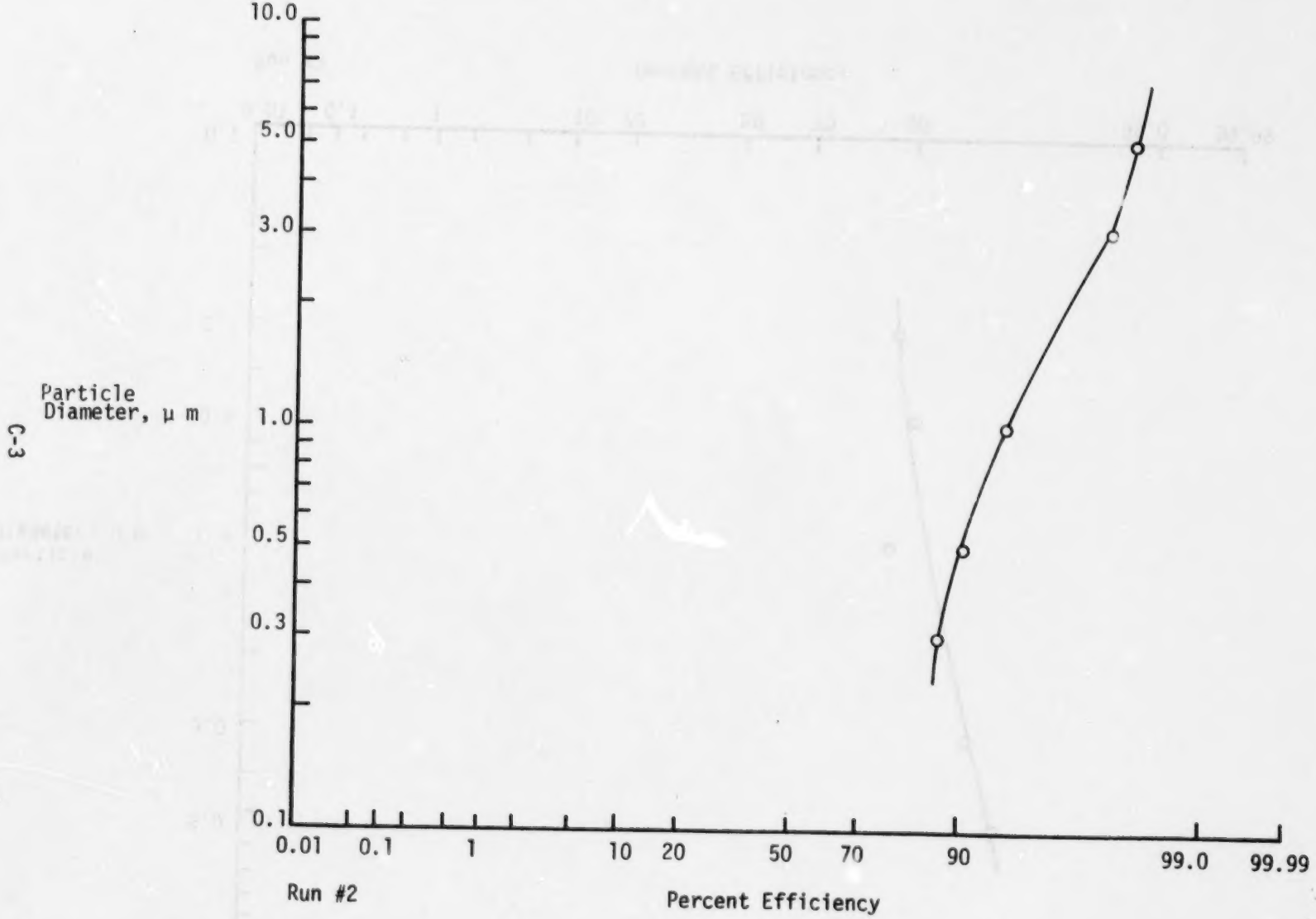
IMPACTOR STAGE	S1	S2	S3	S4	S5	S6	S7	FILTER
STAGE INDEX NUMBER	1	2	3	4	5	6	7	8
D50 (MICROMETERS)	9.01	9.58	4.15	1.79	1.12	.59	.22	
MASS (MILLIGRAMS)	12.99	.46	1.98	2.51	5.00	4.15	1.86	1.90
MG/DSCM/STAGE	8.23+01	2.91+00	1.25+01	1.59+01	3.17+01	2.63+01	1.18+01	1.20+01
CUM. PERCENT OF MASS SMALLER THAN D50	57.90	56.41	49.93	41.85	25.65	12.19	6.16	
CUM. (MG/ACM) SMALLER THAN D50	7.01+01	6.83+01	6.05+01	5.07+01	3.10+01	1.48+01	7.46+00	
CUM. (MG/DNCM) SMALLER THAN D50	1.12+02	1.09+02	9.64+01	8.07+01	4.95+01	2.35+01	1.19+01	
CUM. (GR/ACF) SMALLER THAN D50	3.06-02	2.98-02	2.64-02	2.21-02	1.36-02	6.45-03	3.26-03	
CUM. (GR/DNCF) SMALLER THAN D50	4.88-02	4.75-02	4.21-02	3.53-02	2.16-02	1.03-02	5.19-03	
GE.. MEAN DIA. (MICROMETERS)	1.34+01	3.29+00	6.31+00	2.72+00	1.41+00	7.73-01	3.47-01	1.59-01
DN/DLOGD (MG/DNCM)	2.38+02	-1.09+02	3.45+01	4.35+01	1.55+02	8.24+01	3.12+01	4.00+01
DN/DLOGD (NO. PARTICLES/DNCM)	7.22+07	-1.00+08	1.01+08	1.58+09	4.04+10	1.31+11	5.50+11	7.34+12

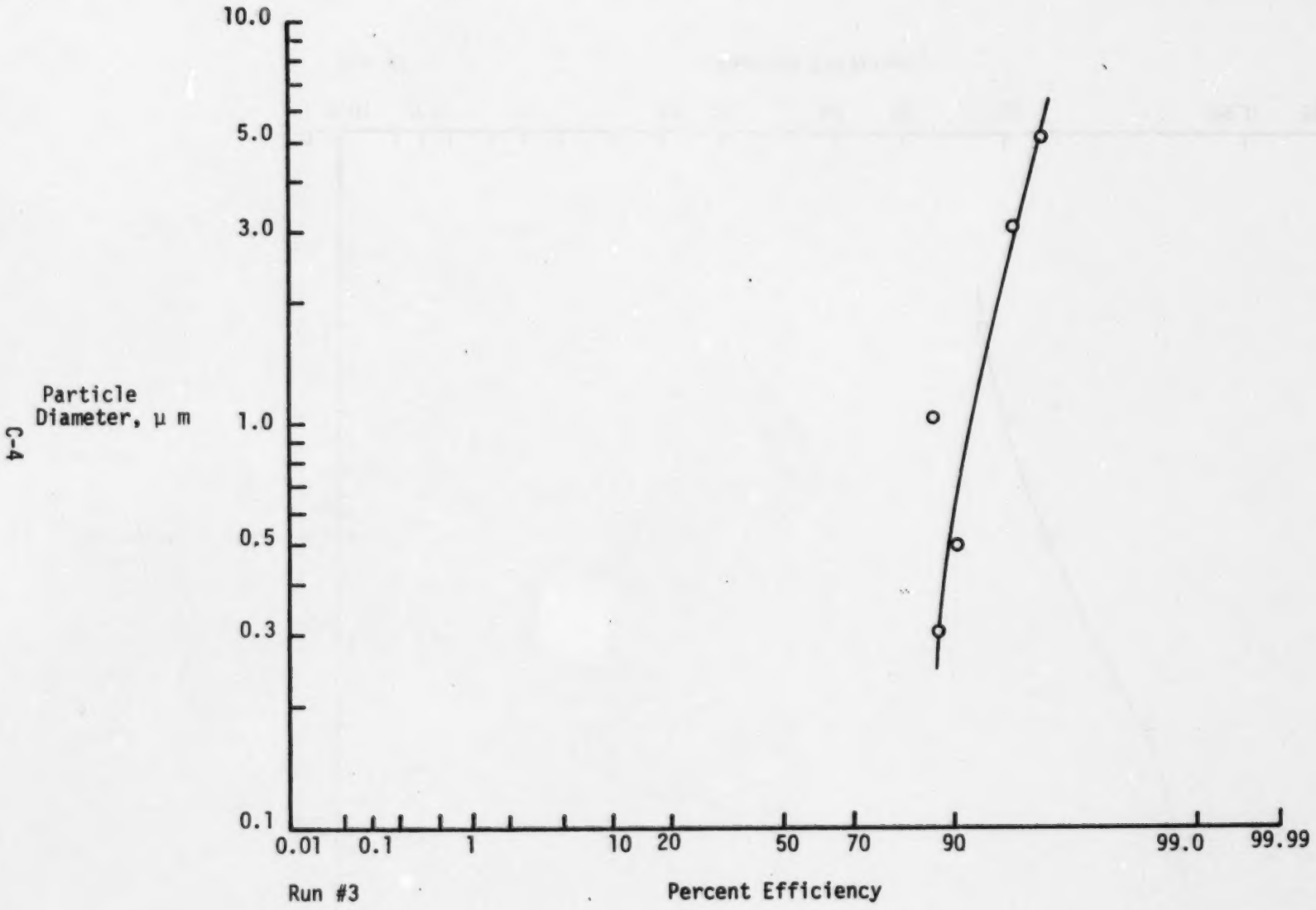
NORMAL (ENGINEERING STANDARD) CONDITIONS ARE 21 DEG C AND 760MM HG.

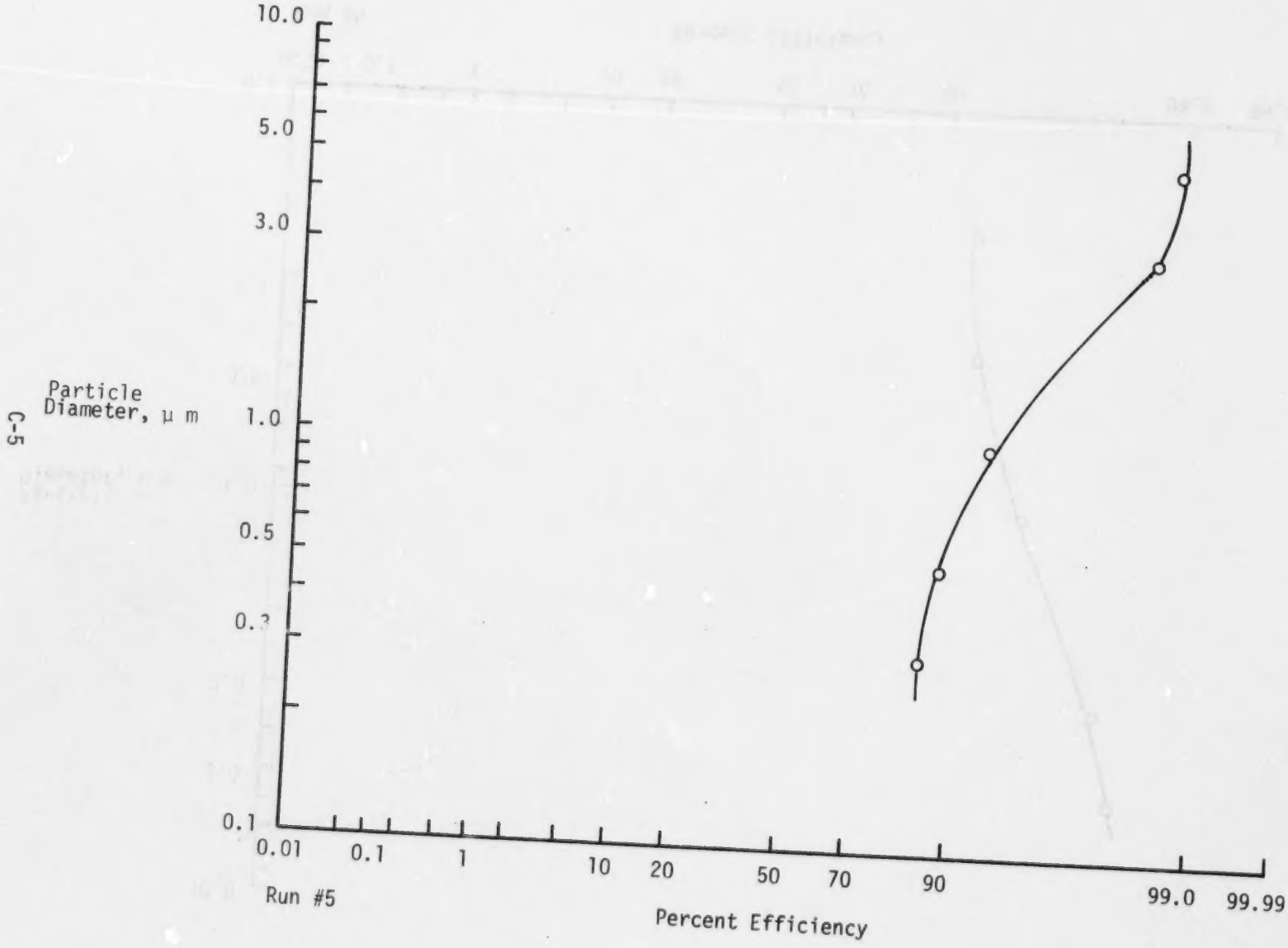
APPENDIX C

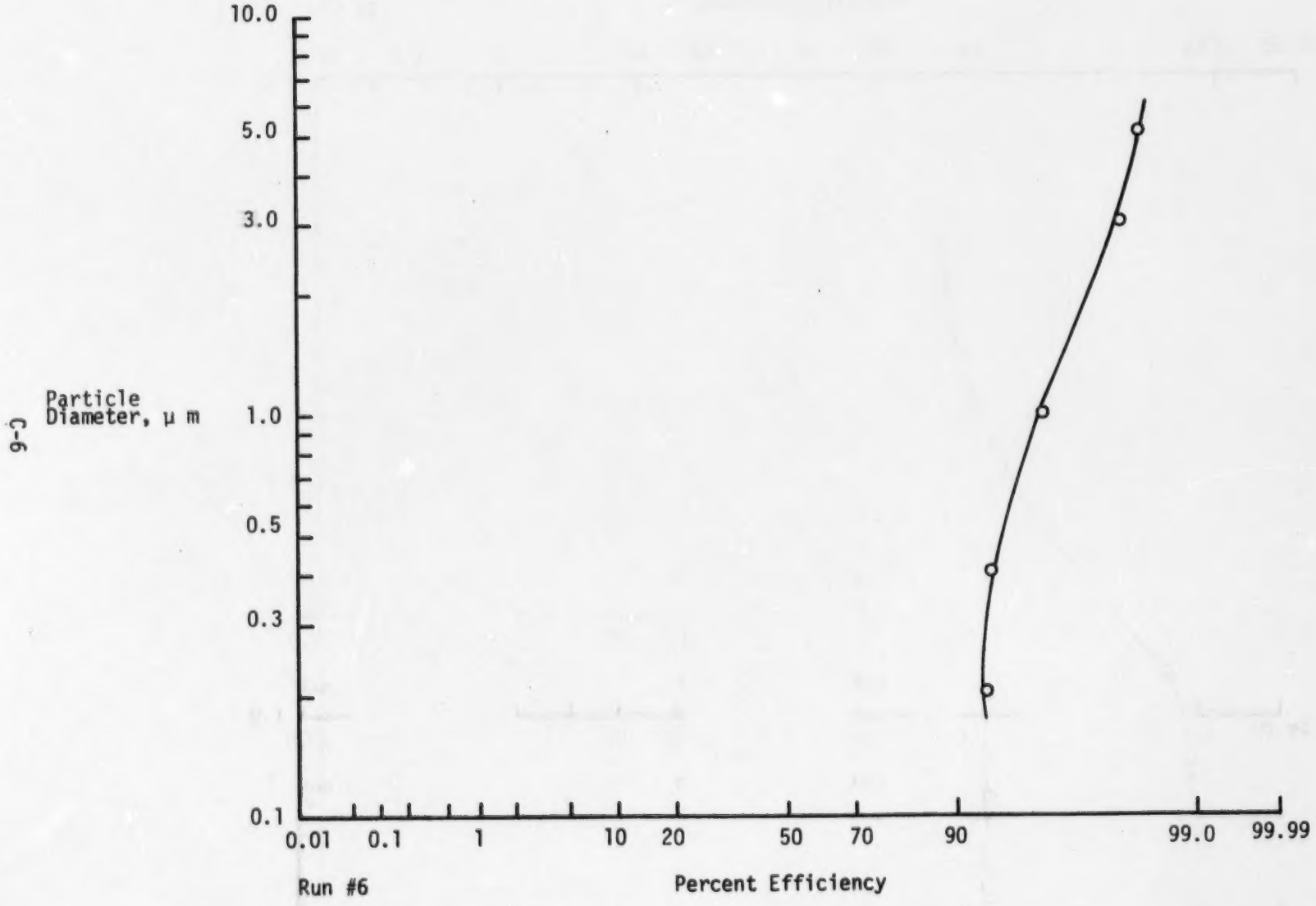
Fractional Efficiency Plots

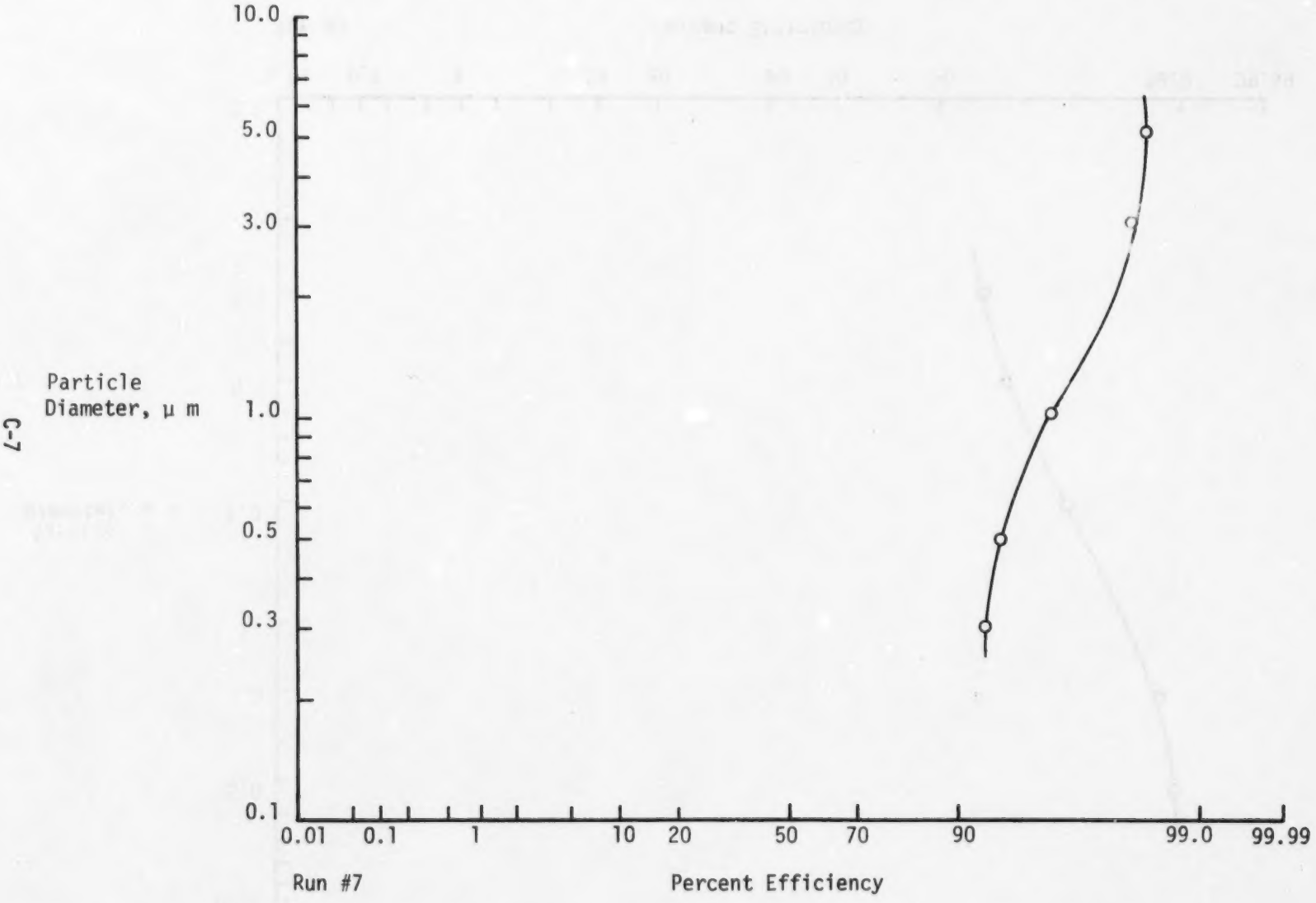

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #1
Percent Efficiency

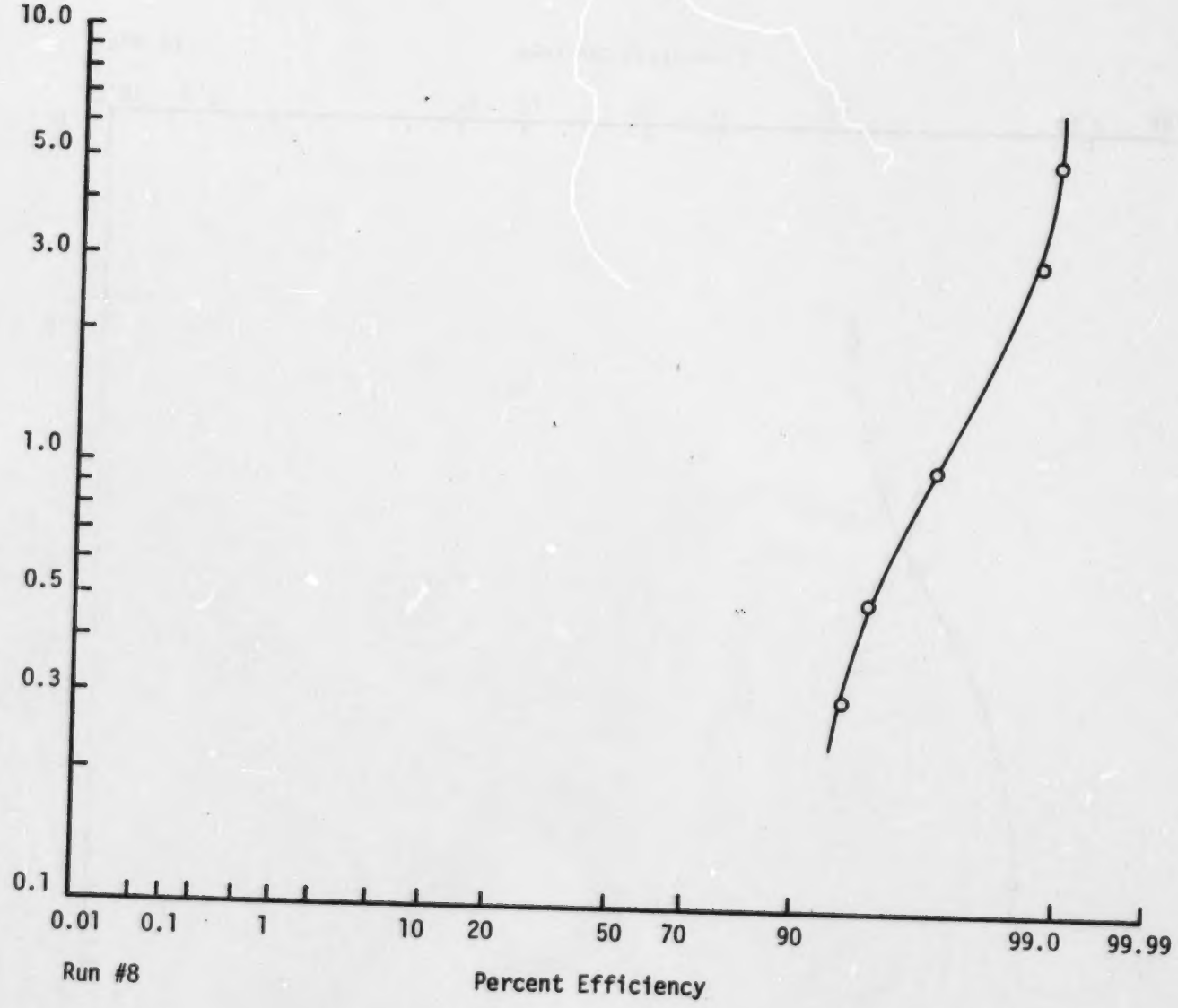

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #2

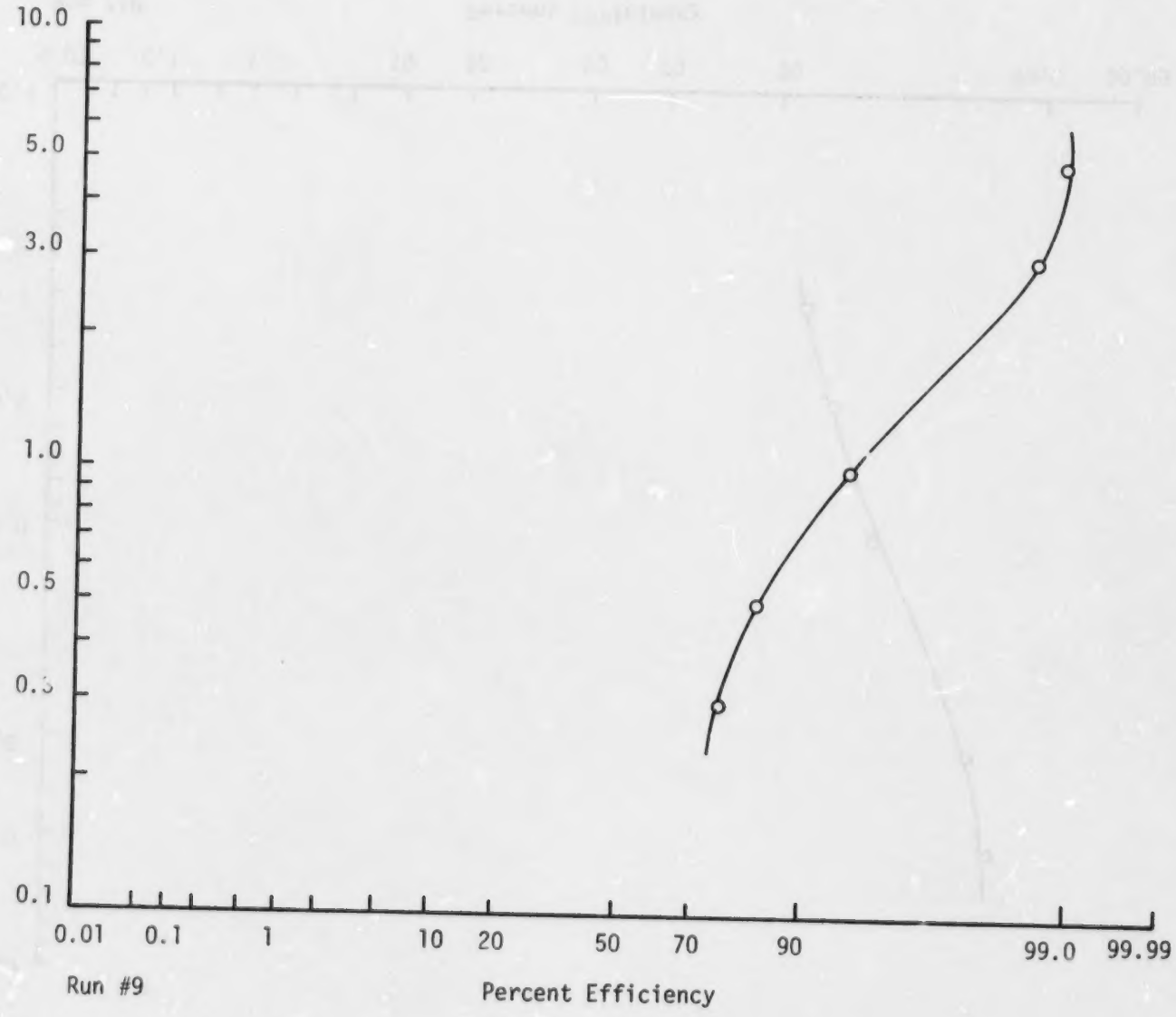

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #3

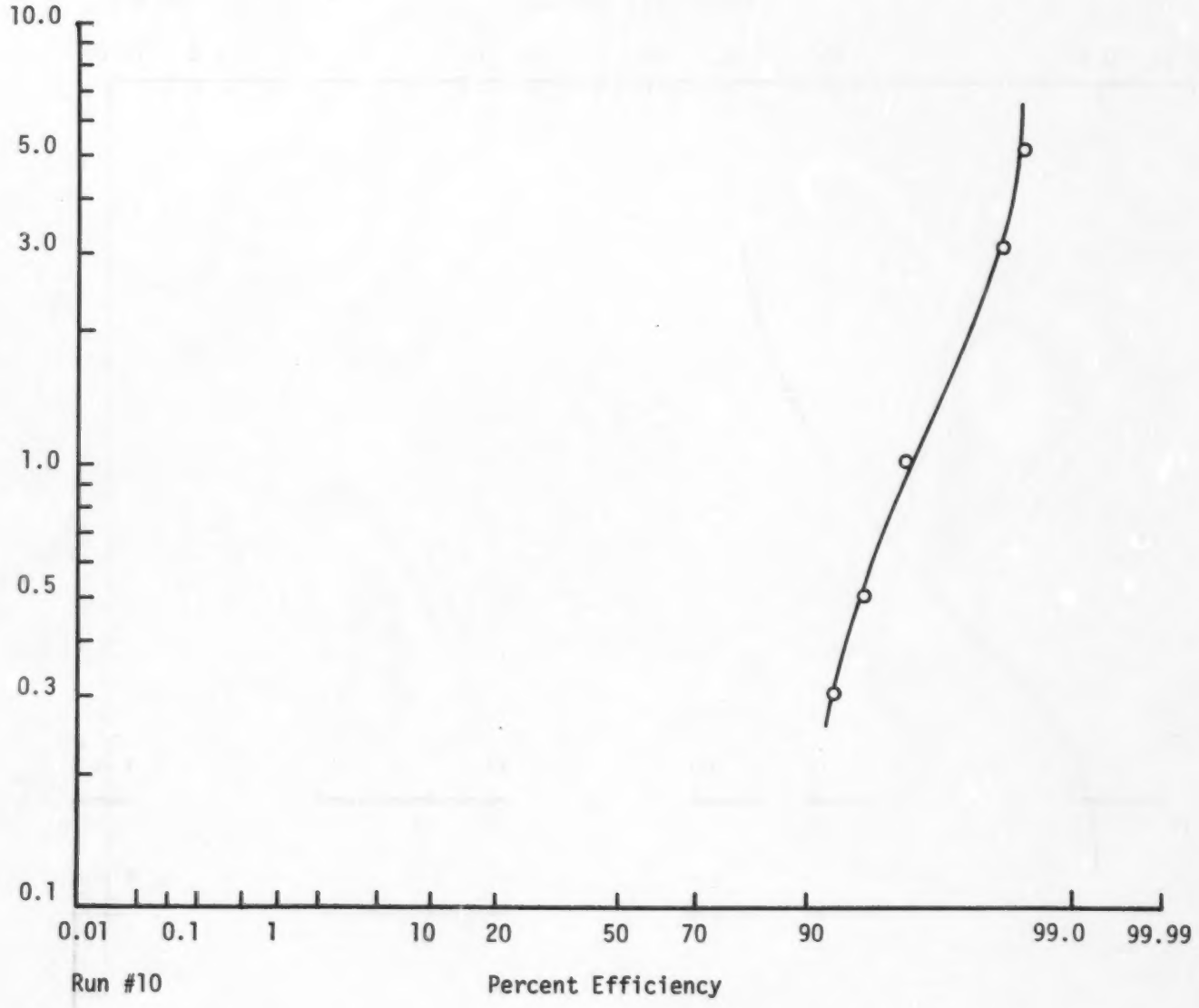

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, µ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #5

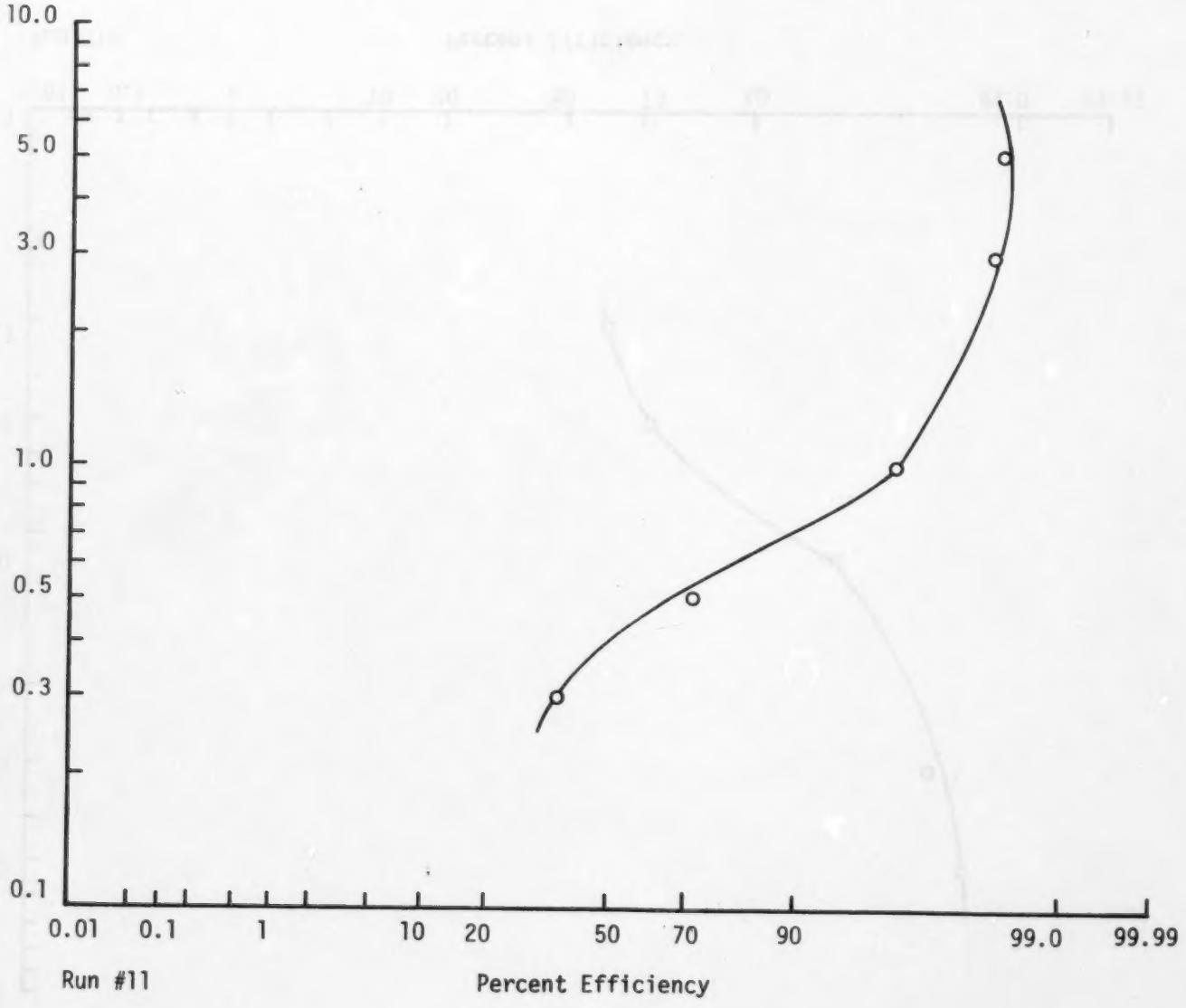

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #6

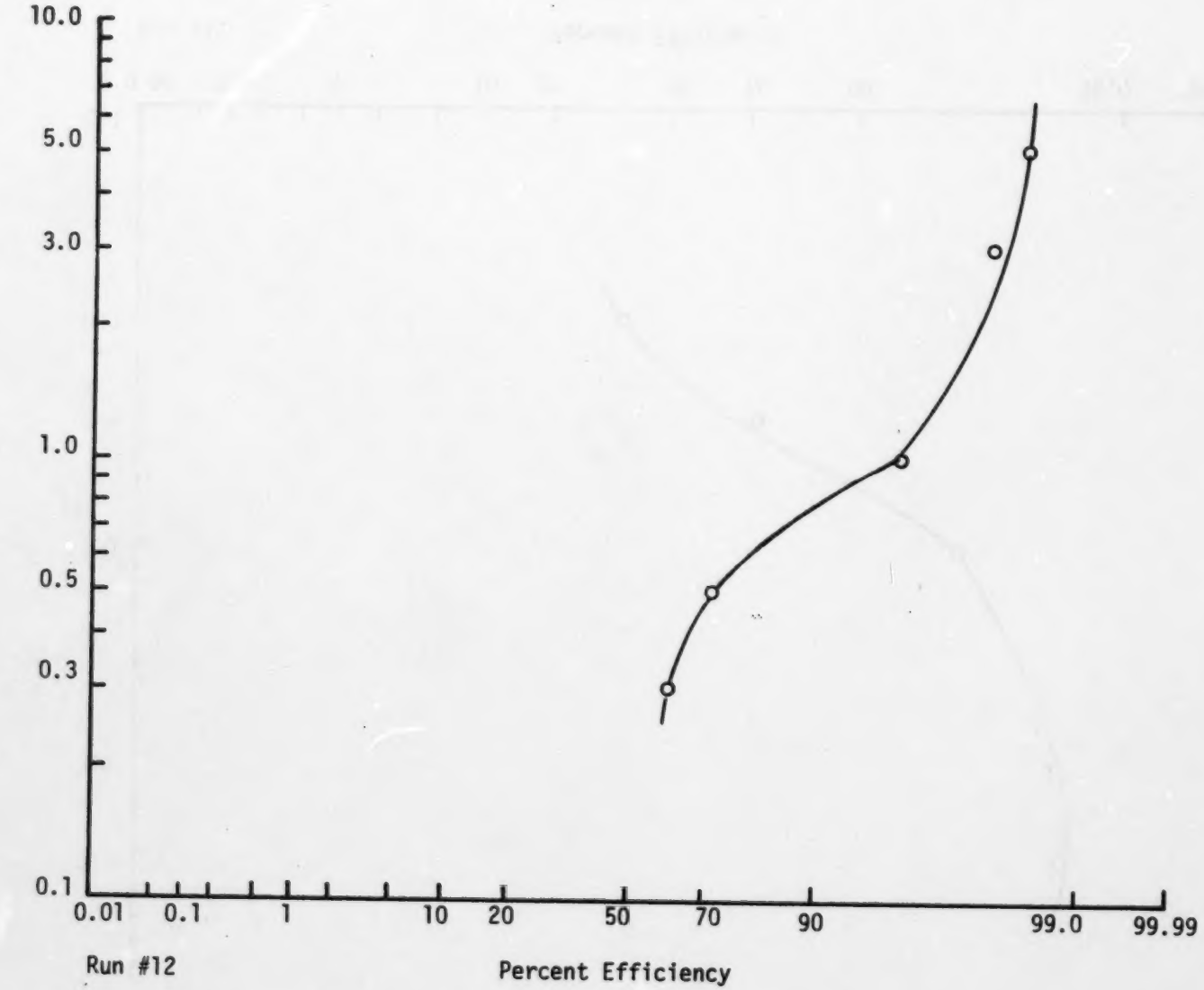

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle
Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #7
Percent Efficiency

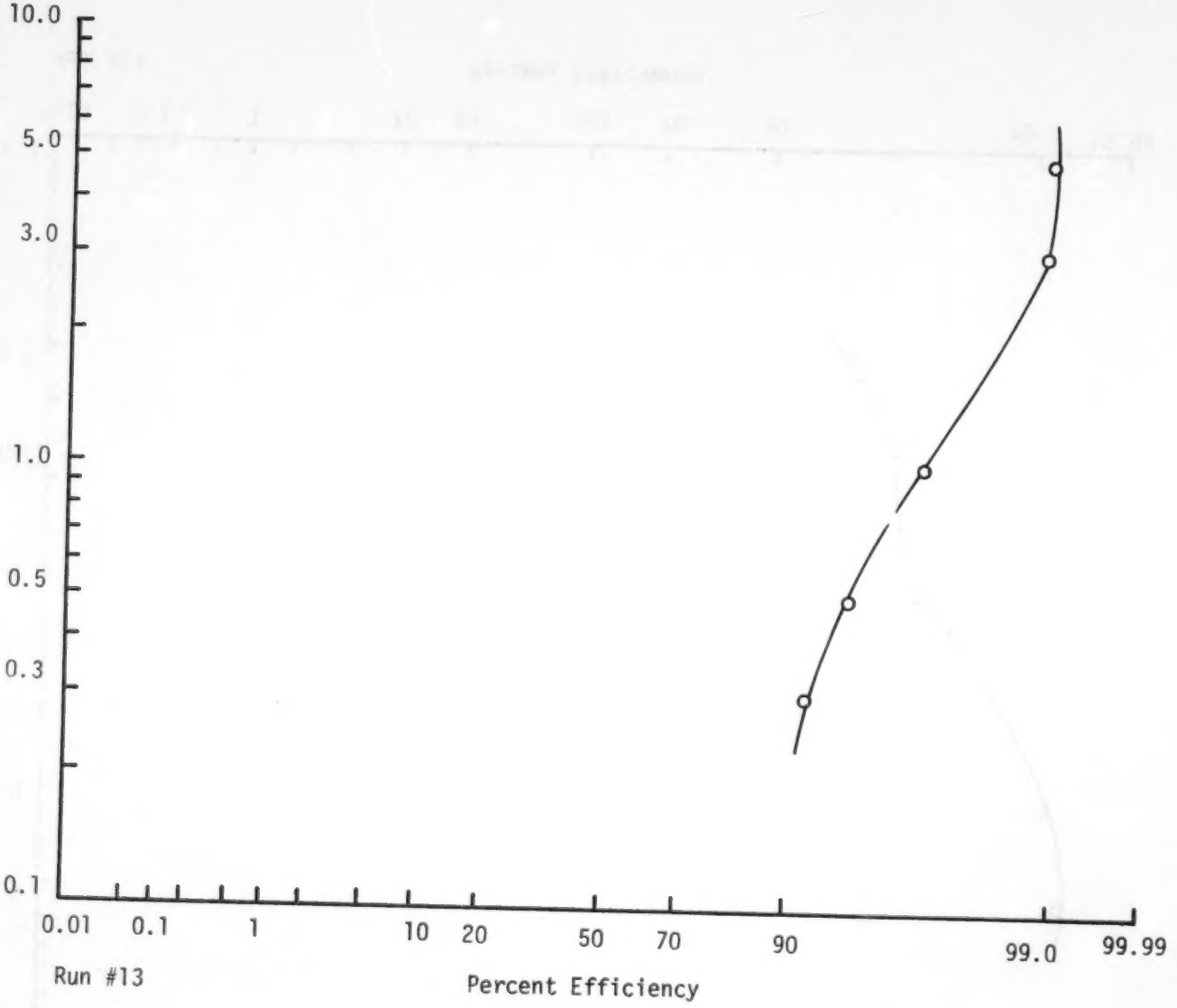

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #8

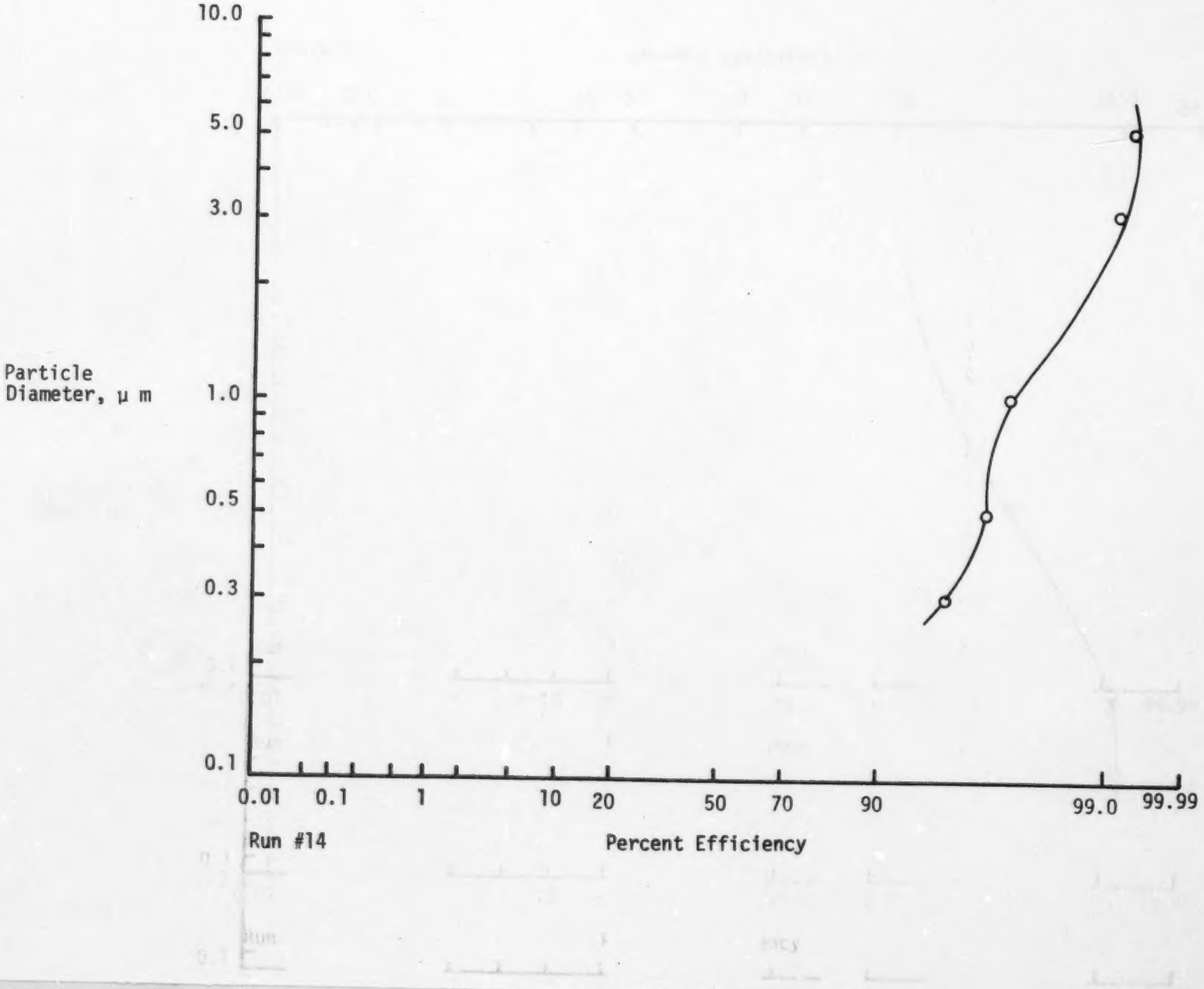

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, µ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #9

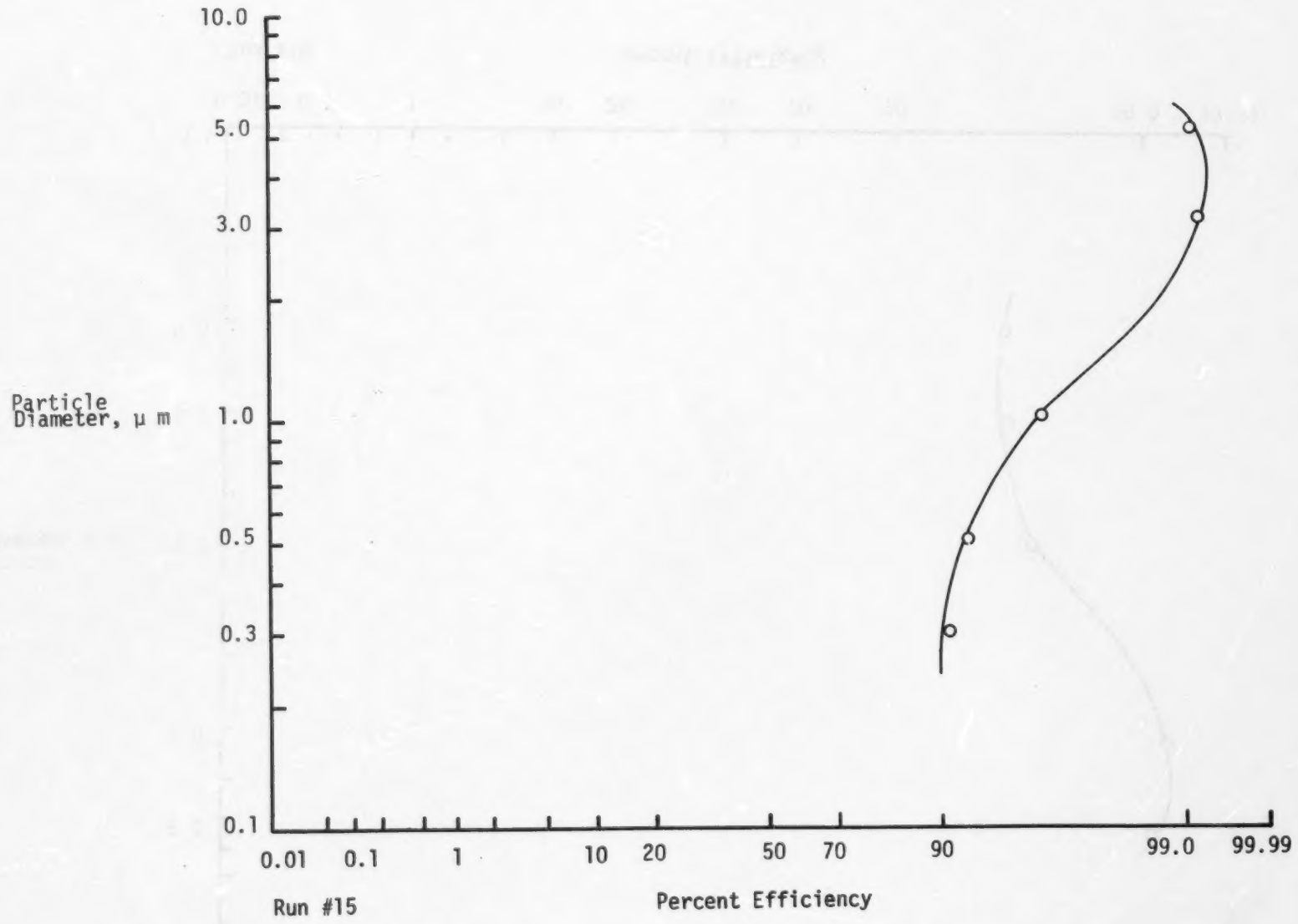

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #10
Percent Efficiency

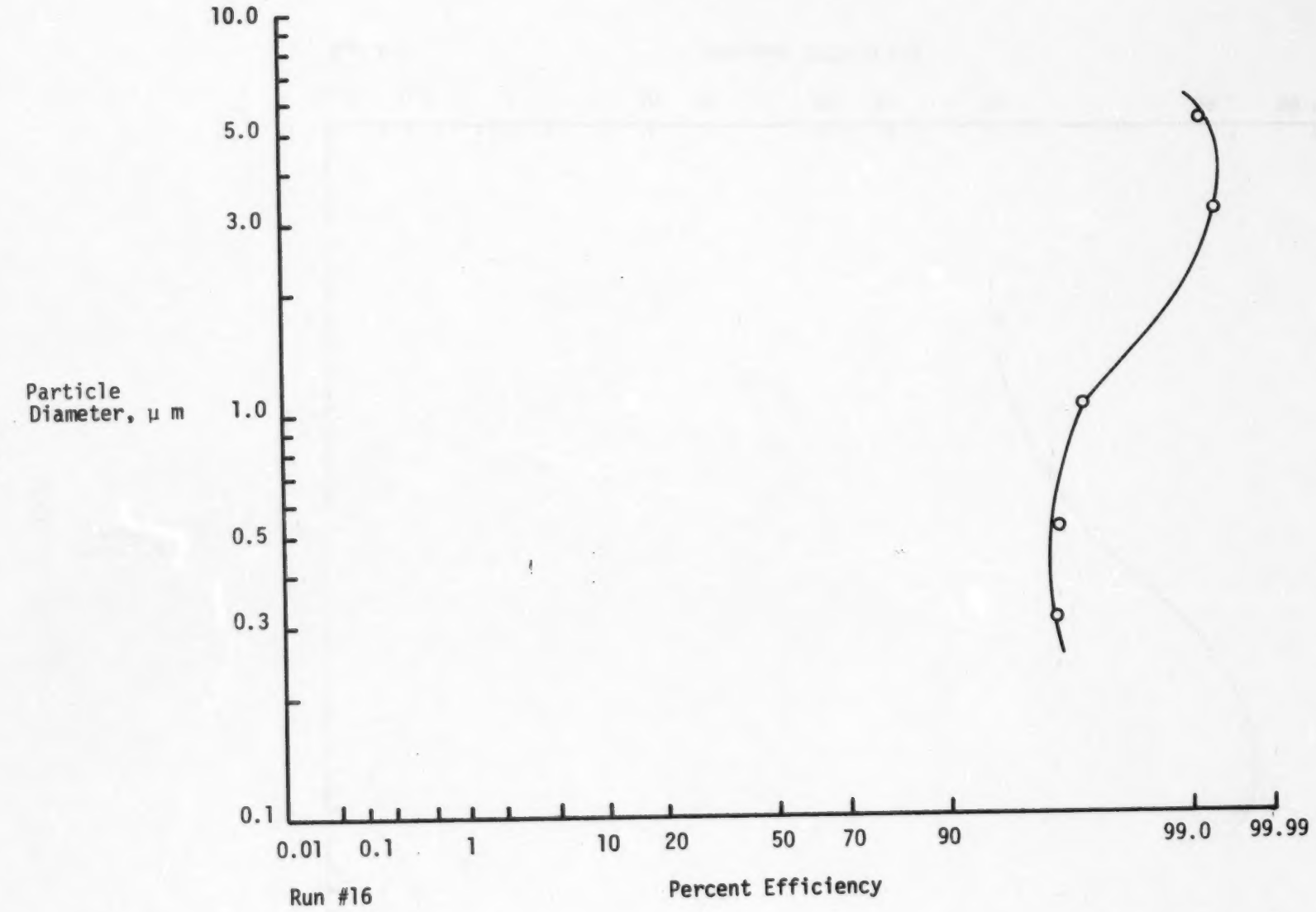

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #11
Percent Efficiency

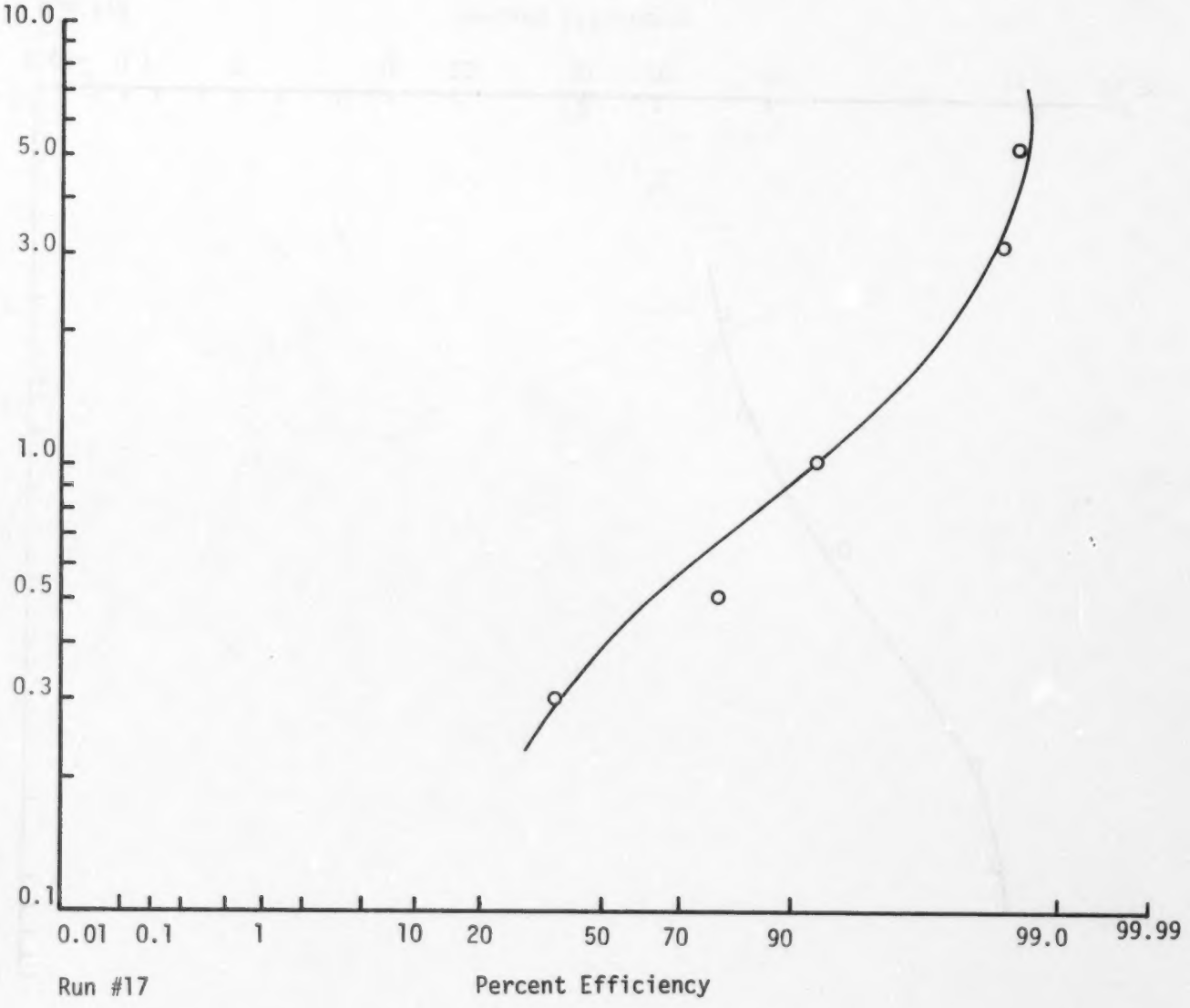

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #12


10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #13

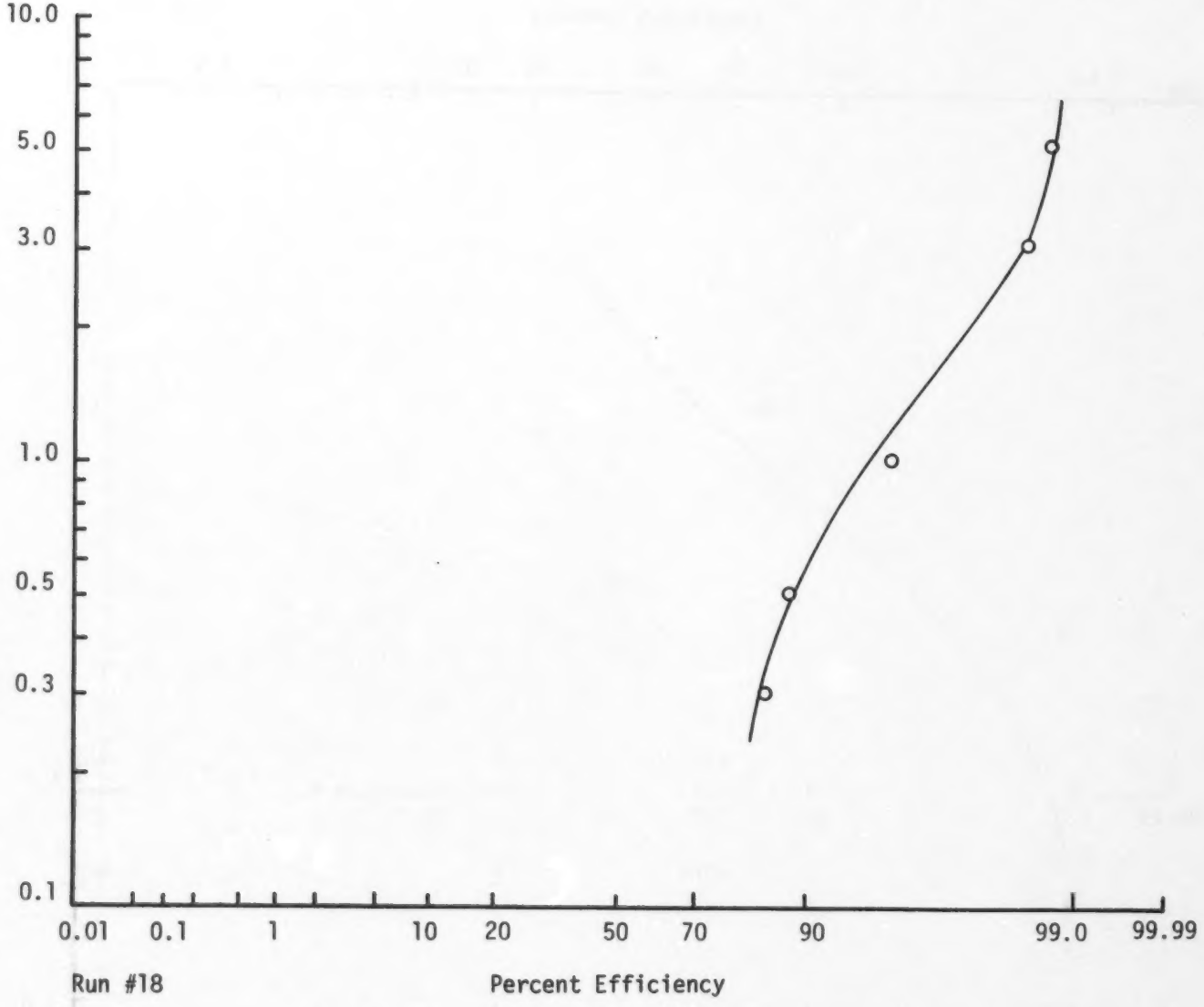

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #14

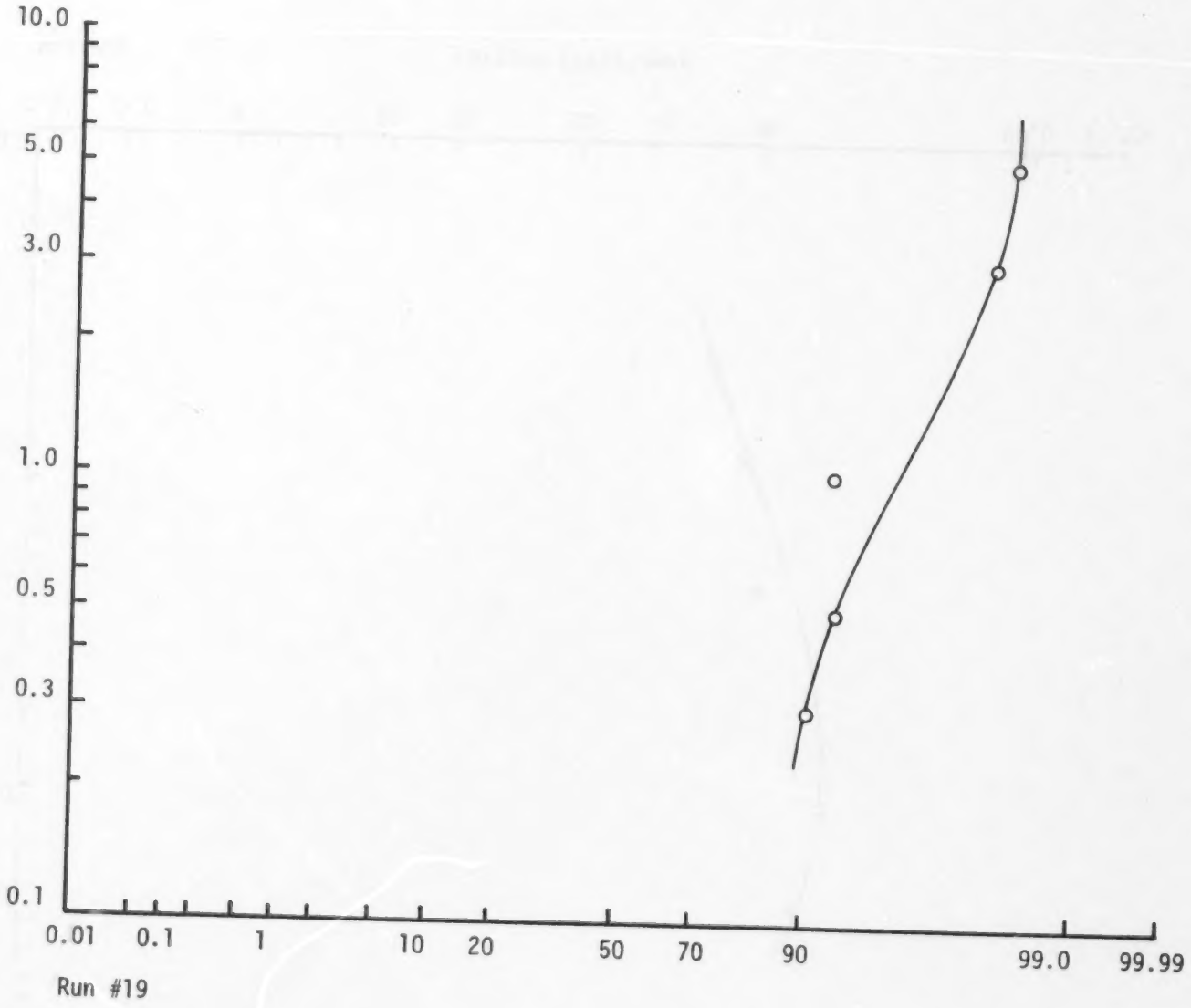

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #15

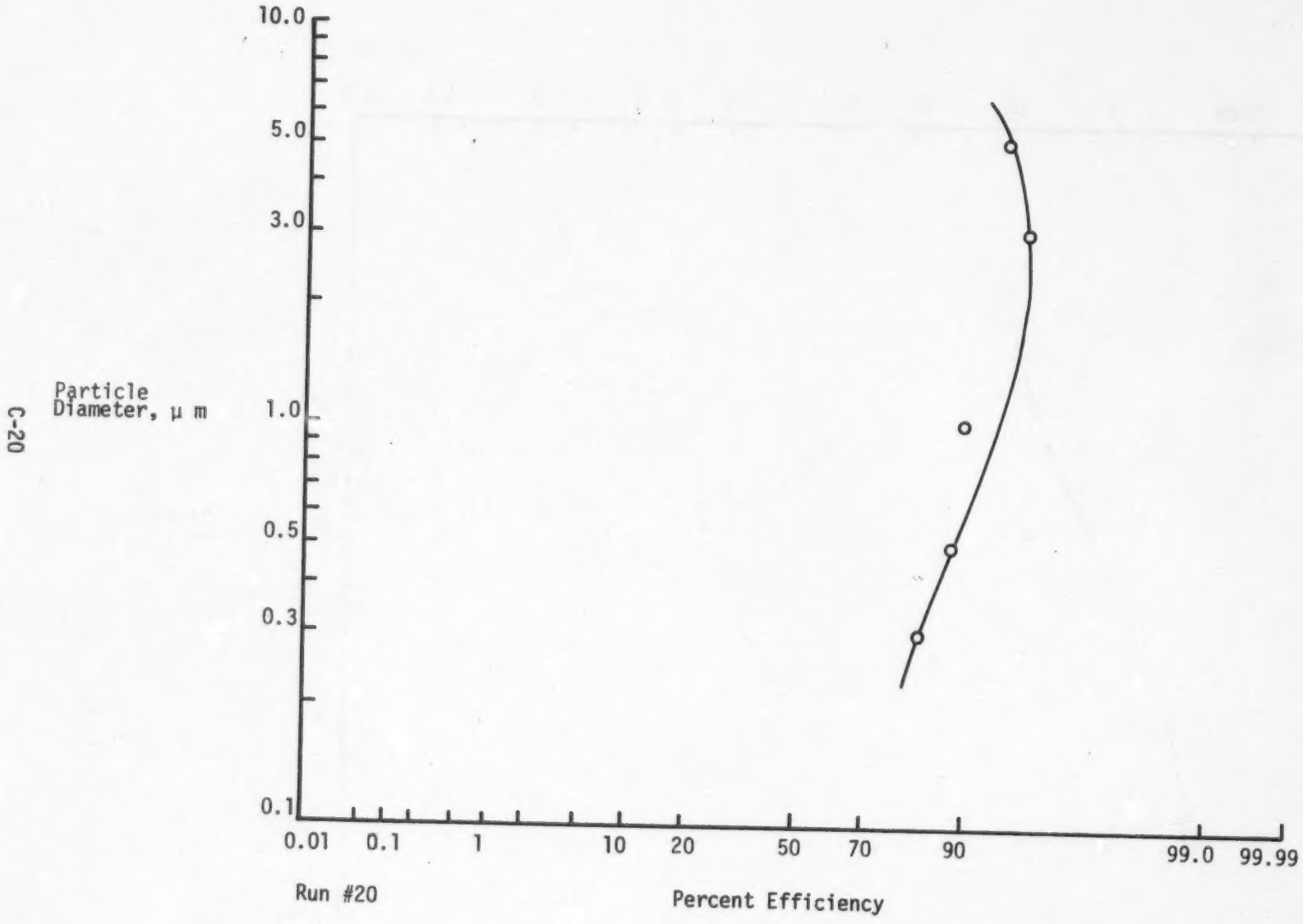

10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency
Run #16


10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency

Run #17


10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #18
Percent Efficiency


10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle
Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Run #19


10.0
5.0
3.0
1.0
0.5
0.3
0.1
Particle Diameter, μ m
0.01
0.1
1
10
20
50
70
90
99.0
99.99
Percent Efficiency

Run #20